...CHNOLOGY DEPT.

FLIGHT

MAGAZINE

AUGUST, 1952

35 cents

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DETROIT

Round-Up Time in Texas--With A Cowboy 'Copter

...h half a million acres to cover, the Waggoner Ranch in ...as has put a new Bell Model 47D-1 helicopter to work ... its cowboys. Ranch Pilot Sherman Kennedy flies at brush-top height, flushes cattle from thickets and drives them to waiting cowhands. Here the 'copter is superimposed over a ...

Flying Tomorrow's Jets

Sperry research engineers are seeking solutions for tomorrow's flight control problems while they develop new ways to better the performance of control equipment currently flying.

This analog computer is duplicating flight conditions of a new high-performance jet bomber being "flown" automatically by the Gyropilot* flight control. Here, for instance, a Sperry engineer checks the performance of the airplane and automatic pilot during the bombing run.

In test after test – in laboratory and its great Flight Research Center, MacArthur Field, Long Island–Sperry flight controls are continuing to prove their capacity to maintain stable all-weather flight in jet, propeller-driven, rotary-wing, lighter-than-air and pilotless aircraft.

For 40 years Sperry has been working continually on flight control problems. With this wealth of experience to build on, tomorrow's problems are being met by today's research and engineering.

*T.M. REG. U. S. PAT. OFF.

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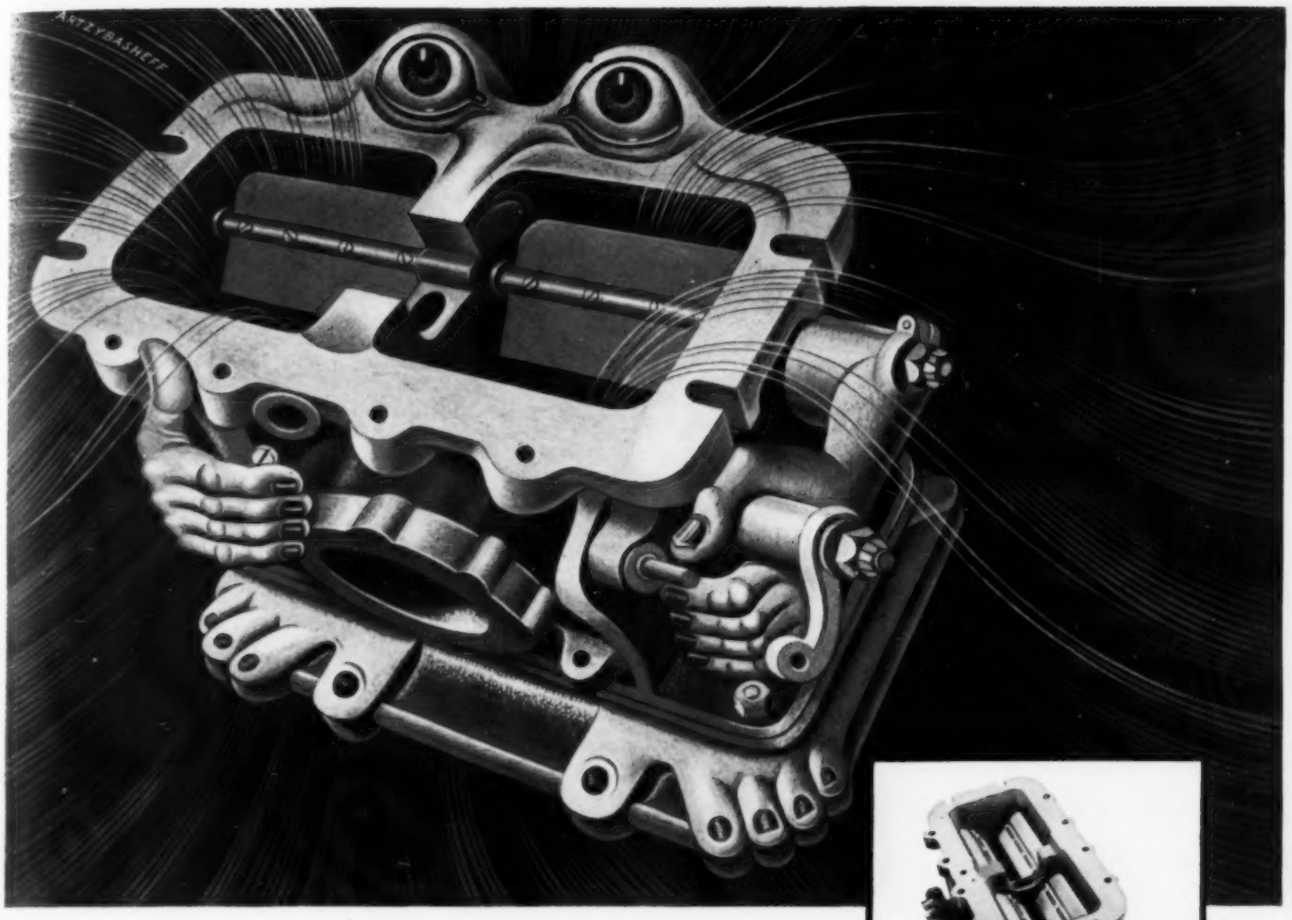
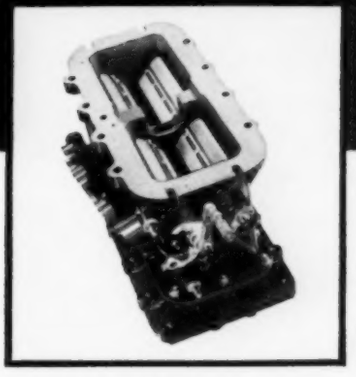


Watch a plane's "lung" take a deep breath

An aircraft engine gulps *15 times* more air than fuel. To control this air flow—adjusting perfectly to frequent changes in speed and altitude—requires a precision-machined "lung" that never leaks, never coughs. Producing a part so precise typifies Lycoming resourcefulness and skill, long famous in the aircraft field—increasingly in demand throughout *all* American industry.

Whether you require precision machining, high-volume production, product development—or air-cooled power for aircraft or ground applications—Lycoming offers extensive facilities and experience.

Whatever your problem—look to Lycoming!



To inhale 30,000 pounds of air every hour, a plane needs good lungs. For a fuel-injection body that "breathes steady," **one of America's leading aviation corporations calls on Lycoming precision production.**

For a more complete story on Lycoming's varied abilities and facilities, write—on your company letterhead—for the interesting, illustrated booklet "Let's Look at Lycoming."

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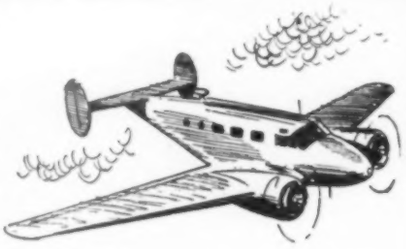
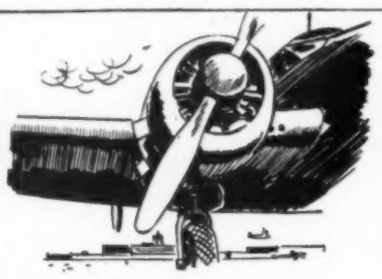


Choose it for speed and performance. With a maximum speed of 230 mph, you're in a class with the Airlines — and you have unsurpassed mobility of action, too.



Choose it for safety. Twin-engine reliability and outstanding single-engine performance provide an assurance of mental ease when flying in less favorable weather conditions.

Choose it because it has proved itself. Wartime versions rolled up hundreds of millions of miles. Today, more than 600 postwar Beech "Twins" are serving leading industries.

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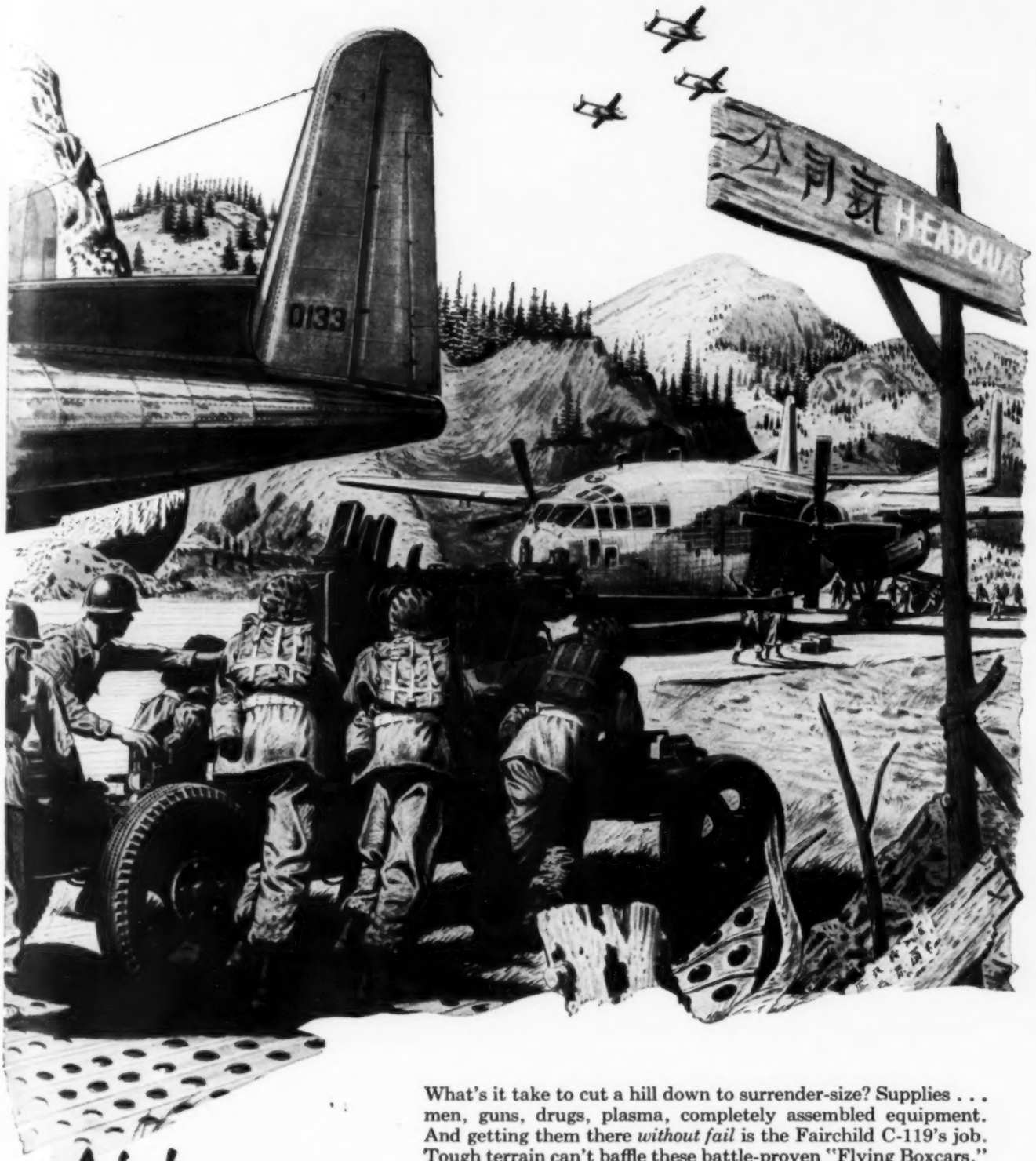

Airborne BELLYFUL for HILL 206

What's it take to cut a hill down to surrender-size? Supplies . . . men, guns, drugs, plasma, completely assembled equipment. And getting them there *without fail* is the Fairchild C-119's job. Tough terrain can't baffle these battle-proven "Flying Boxcars." They deliver in a quagmire or a tangled jungle, by parachute or on iron matted runways.

Fairchild designed these rugged aircraft for speed, stamina, versatility. Tribute to Fairchild's engineering skill is that the C-119 "Flying Boxcar" is the number one all-purpose transport for military airlift operations of the U. N. forces in Korea, and for other airlift operations in Europe and the United States.

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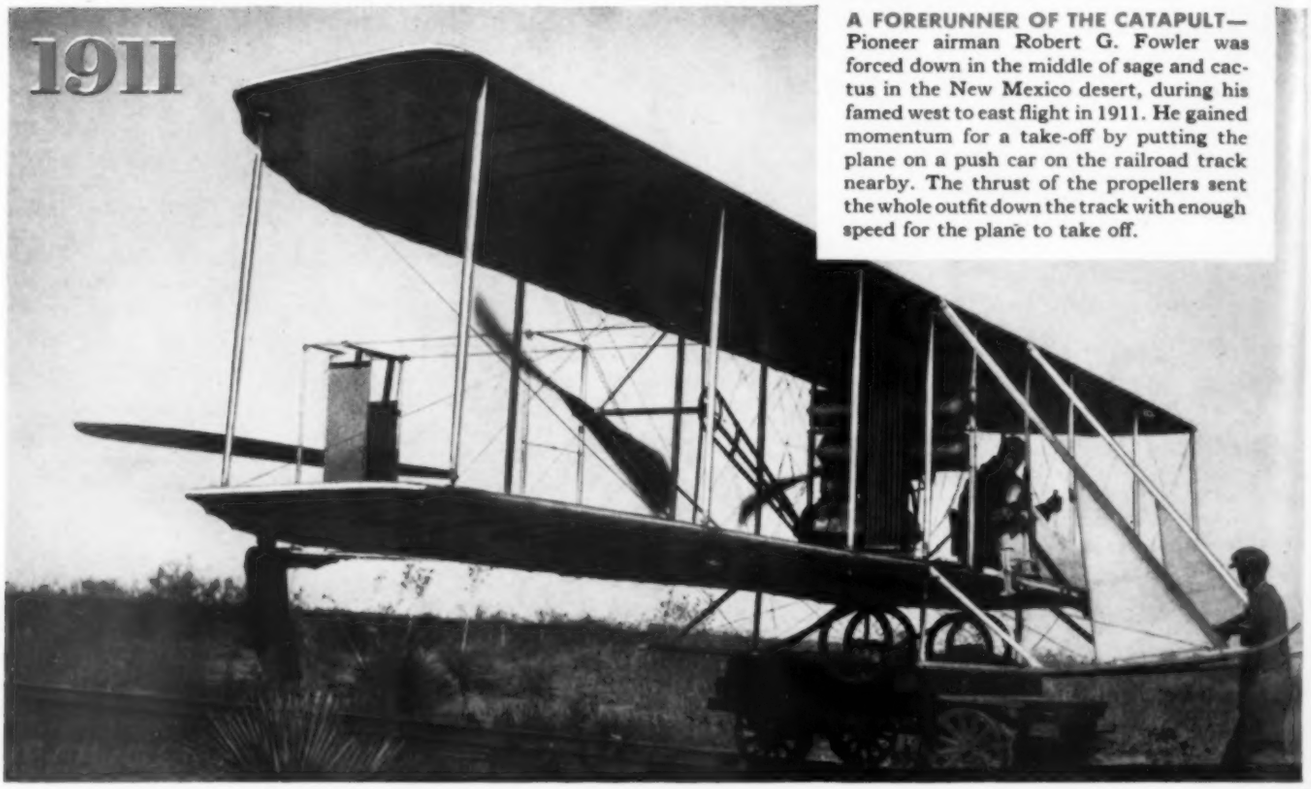
West-East Pioneer....



A FORERUNNER OF THE CATAPULT—Pioneer airman Robert G. Fowler was forced down in the middle of sage and cactus in the New Mexico desert, during his famed west to east flight in 1911. He gained momentum for a take-off by putting the plane on a push car on the railroad track nearby. The thrust of the propellers sent the whole outfit down the track with enough speed for the plane to take off.

Pioneer pilot Robert G. Fowler's railroad push car take-off foreshadowed in part the development of modern catapults used on our Navy's carriers. Another example of how necessity has served as the mother of invention.

So, in the field of aviation products, Phillips Petroleum Company has kept pace with the need for higher octane gasoline and dependable lubricants. A pioneer in the field of special aviation gasolines, Phillips is today one of the country's largest suppliers . . . for commercial and military as well as private use. Phillips stands ready with new fuels for turbo-props and jets, in addition to its tremendous capacity for producing 115/145 grade aviation gasoline.

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MODERN CATAPULTS on our Navy's aircraft carriers are hydraulically and pneumatically driven. An accelerating stroke of 97 feet and a brake stroke of about 27 feet make the catapult about 124 feet long. The actual machinery is located well below deck with a cable arrangement up to the flight deck. Above a Chance Vought F7U Cutlass leaves the flight deck after being catapulted from the port side catapult.

Phillips 66

AVIATION PRODUCTS

AIR Report

Significant Trends and News

LIGHTPLANE'S MERCY ROLE IN DISASTERS was again proved last month when a major earthquake devastated the California town of Tehachapi, pop. 2,000. Cecil Meadows of Kern County, Calif., president of the American Association of Airport Executives, writes FLIGHT MAGAZINE as follows: "Our Tehachapi-Kern County Airport No. 4, with 4 planes based there, suddenly became very busy. With the assistance of CAA, BFL, ATC we set up portable air traffic control and checked in 607 planes with more than 1,800 people in the first 48 hours. More doctors and nurses were cleared than could be used. It was terrible but proved a wonderful test for emergency aircraft action."

CONTINENTAL MOTORS TROPHY RACES FOR MIDGET PLANES will feature the 5th Annual International Aviation Exposition at Detroit-Wayne Major Airport, August 30-September 1, sponsored by the Aero Club of Michigan. Jack Reese, Continental president, said prospects indicate a sizeable entry of backyard racers. John Paul Jones has taken the Continental Trophy home to California for the last two races at Detroit, and rivalry between his West Coast group and former winners Steve Wittman and Bill Brennand promises the hottest race yet. Also on the Exposition agenda are annual conventions of the Air Force Association and the National Aeronautics Association. Record turnout of aviation people is expected. If you want an interesting weekend, go to Detroit August 30-September 1.

FOUR AEROCAR "FLYING AUTOMOBILES" NOW BEING BUILT AT LONGVIEW, WASHINGTON, HAVE BEEN SOLD, 10 MORE ARE BEING OFFERED AT $15,000 EACH, AND CAA CERTIFICATION WILL BE COMPLETED with recently-raised funds, according to a letter to FLIGHT MAGAZINE from Molt Taylor, the designer. His Aerocar is a 2-place, powered by a 135-hp. Lycoming with pusher prop in the tail. On the highway, it utilizes fluid drive and tows its flight surfaces behind trailer-fashion. Speeds include 100 mph. in the air and 60 mph. on the ground, with 500-fpm. rate of climb as a flying auto. First purchasers are large business firms which will use the Aerocar in promotional projects. Address for interested persons: Molt Taylor, president; Aerocar Company, Longview, Washington.

ALMOST AUTOMATIC is description by Lockheed for its F-94C Starfire for USAF, armed without guns but with two dozen 2.75-in. rockets housed in a ring of firing tubes around the nose. An interceptor, it is outfitted with radar and "brain-like" instruments to spot an enemy bomber miles away, lock onto the target, track, close the gap, aim and then open fire—all by itself while the pilot does the flying. Its Pratt & Whitney J-48-P-5 jet is rated at 6,250 lbs. of thrust plus the effects of afterburning. Instrumentation includes Sperry Zero Reader and Westinghouse autopilot.

SPEED OF 1,238 MPH. ATTAINED BY DOUGLAS D-558-2 Skyrocket last year has been officially released. Altitude attained was above 79,000 ft. Navy claims this as fastest and highest man has ever flown.

UNOFFICIAL FINALS IN THE ANNUAL WORLD SOARING CHAMPIONSHIPS held near Madrid, Spain, July 1-14, give first place to Philip Wills of England, who flew an English-built Sky 34. Pierre of France took second place while Paul MacCready, Jr., flying an SGS 123, took sixth place. Bill Beuby and Shelly Charles flying a Kranich took fourth in the two-place division. Dick Johnson had bad luck early in the meet when his RJ-5 suffered damage in a high wind while landing. Johnson finished in the 24th spot. Teams from nineteen foreign countries participated in the championships, the first international meet in which a full American team ever competed.

OVER 200 F-47 THUNDERBOLT FIGHTERS are being overhauled by Temco under a new USAF contract. . . . **CESSNA EXPORTS TO 45 OVERSEAS DISTRIBUTORS** during the first half of 1952 represented 40 per cent of all the airplanes exported by the U. S. aircraft industry, according to Cessna.

AUGUST 19-30 ARE DATES FOR SOARING SOCIETY OF AMERICA'S 19th NATIONAL SOARING CONTEST at Grand Prairie, Texas, preceded by a special camp for enthusiasts at Odessa, Texas, where

(Continued on page 40)

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

AUGUST, 1952 VOL. 38, No. 2

COVER: The Waggoner Ranch's Bell helicopter superimposed on a scene showing cowboys roping out calves for branding at a water tank where the cattle had been driven during a round-up.
—(Bell Aircraft Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas

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Incomparable

a pretty girl

Put a beautiful coed in a chic WAF uniform and what have you got? You have an inspiring symbol of the American woman's traditional strength in time of crisis; of her determination to help her man, whoever he may be, in the winning of a war. Isabelle Wilson, a junior at SMU, is 20, has green eyes and blonde hair. She swims and reads a lot. (No. 11 in a series of pretty Dallas girls discovered and photographed especially for Southwest Airmotive).

Incomparable

A Propeller Overhaul
By Southwest Airmotive

SOUTHWEST AIRMOTIVE COMPANY

LOVE FIELD • DALLAS

Just among ourselves

EDITORIALS

TWO-WAY STREET

THE long and tedious task of streamlining and simplifying the federal civil air regulations gained encouraging momentum last month when Civil Aeronautics Administration officials agreed to certain changes in forms and procedures affecting non-air carrier aviation. Student pilot permits will be issued directly in the field by aviation safety agents and will be good for 24 months instead of issuance of temporary certificates which heretofore had to go to Washington. Temporary physical examination certificates good for 30 days provided by the family doctor will now authorize applicants to fly immediately instead of waiting for the medicals to go to Washington and back. In addition, private pilot exams will be graded in the field by the examiner and the pilot advised immediately of his grade. Form 309 has been completely eliminated and will no longer have to be carried in the airplane. From now on private planes will have to carry only their registration and airworthiness certificates.

These are among the major revisions announced after a three day conference between industry and CAA officials in Oklahoma City. A large measure of credit for the action is due John H. Burke, Oklahoma City airport service operator, and Eldon Stout, Oklahoma state director of aviation. Burke and Stout recently completed a nationwide tour and held meetings of pilots, operators, plane owners, and state aviation officials in every CAA region to determine what the industry desired in the way of simplification and just where the operation should begin.

"At least this is a beginning," Burke observed. "It's something we've been trying to do for the past seven years. When government representatives work with the industry for its improvement we can accomplish something. Specific agreement on the part of high CAA officials to eliminate useless forms and simplify complex procedures as demonstrated last month is the best proof we have that they intend to keep faith with the industry from now on out."

Burke accomplished these results largely because he went out into the field and brought back a dependable consensus of opinion. It is an easy matter to sit around and complain vociferously about burdensome and complex regulations and practices and do nothing about it. Far too many airmen do not realize how difficult it is for the CAA and CAB to get majority opinions nor do they appreciate the trouble involved in having to go to so many aviation groups and aviation organizations, none of which ever seems to agree on any one suggestion.

We ourselves have been grossly guilty of impatience with the federal aviation agencies from time to time and have criticized the seemingly apathetic attitude toward certain glaring needs for change. Yet we must admit that never, when the will of the majority was clearly made known, has action failed to be taken. One of the best examples of this is CAB Chairman Don Nyrop's recent action rescinding the order to convert to nautical miles. It was bold, forthright action whether you agree with the decision or not. The CAB chairman was in one of those tough spots where it's hell if you do and hell if you don't. But he took action.

We think that the whole point lies in the fact that the industry can pretty well have what it wants in the way of regulations or procedural changes if its various segments can only agree among themselves. As one of the Oklahoma City conferees, who represented the CAA, pointed out, "We get just as frustrated with red tape as you guys."

Civil air regulations and federal aviation policies are certainly a two-way street.

ICE BREAKER

THERE'S no way of knowing how many thousands of people never learned to fly all because of life insurance rates. In any discussion of the question as to what holds aviation back more than any other one factor, you generally can get unanimous agreement on the automatic rate-up of premiums the insurance companies empirically assess when flying enters the picture. Likewise there's no way of knowing how many thousands of aviation enthusiasts have tried to do something about the situation, with little or no success. Small wonder that our eyes popped out of our heads when we recently received a circular letter from an old-line legal reserve Texas insurance company announcing they would accept 1,000 applications for life insurance from the general run of pilots at standard rates. Nothing to join. No restrictions to the policy. No if's, and's or but's.

Checking into the details we found the reasons for such momentous news. One Charles T. Freelove, a professional architect and engineer, longtime private pilot and Bonanza owner, had worked for a year on F. B. Dickey, president of Service Life Insurance Company of Fort Worth, trying to convince him that most pilots in the air were safer than most automobile drivers on the highways. Freelove was so persistent and thorough that the Company finally broke down. "All right," they said, "since it has never been done before, we'll run an experiment on 1,000 applications not to exceed $5,000 each." They established a flying personnel department with Pilot George Crowder in charge and are now in the process of making the experiment.

If the experiment is successful the company intends to expand the program. The real significance lies in the

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fact that other companies will be forced to revise their own thinking which is based on theory rather than actuarial figures.

We have always believed that once the ice was broken, life insurance rates and restrictions for private and commercial pilots would be revised universally. Freelove and Crowder are convinced the experiment will work. If it does, surely the ice has been broken and one of the worst barriers to private flying will start to crumble.

Military Aviation Writers—Fact or Fancy?

WHEN approximately 200 members of the Aviation Writers Association flew into Southern California in July via Boeing-Wichita on the way out and USAF Air Defense Command Headquarters at Colorado Springs on the way back, the aviation industry and military aviation establishments literally took the lid off. With top-level briefings by military manufacturers, airlines and military officials, including demonstrations at the U. S. Naval Ordnance Test Station near Inyokern, California, and Edwards Air Force Base at Muroc Dry Lake, we doubt very much if ever before in this nation's history has so much been shown to a group of writers at one sitting. No stone was left unturned, from the transportation provided by the Military Air Transport Service down to the one afternoon of relaxation at Pancho Barnes' Rancho Oro Verde, to demonstrate and explain to U. S. and Canadian aviation writers (within the realm of security, of course) every possible item in regard to our air preparedness program.

The purpose: to get the facts of air preparedness to the American public. There was no vestige of propaganda, no sign of grinding anybody's axe except perhaps the one that has to do with this nation's very survival. As a result certain facts, both grim and encouraging, will begin to flow into every conceivable channel of public information. We desperately hope the American people will be enlightened and alarmed, intelligently briefed second-hand by those capable journalists who earn their bread and butter as purveyors of aviation information.

Yet through it all one could not help contemplate how ineffective we've been down through the years in telling the American people the truth about American air power and objectively revealing to them that you can't

(Continued on page 34)

The World's FASTEST Long-Range Transports

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Avianca (Colombia)
Braathens–S.A.F.E.
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...and many more

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Humble technical service engineers stepped in, began investigating and found that exhaust heat was causing the magnetos in the engine to demagnetize—hence the RPM loss. They designed a stainless steel shield, lined with asbestos, to protect the magnetos from excess heat. And a tube from the front of the plane brought cool air to the shield to prevent overheating.

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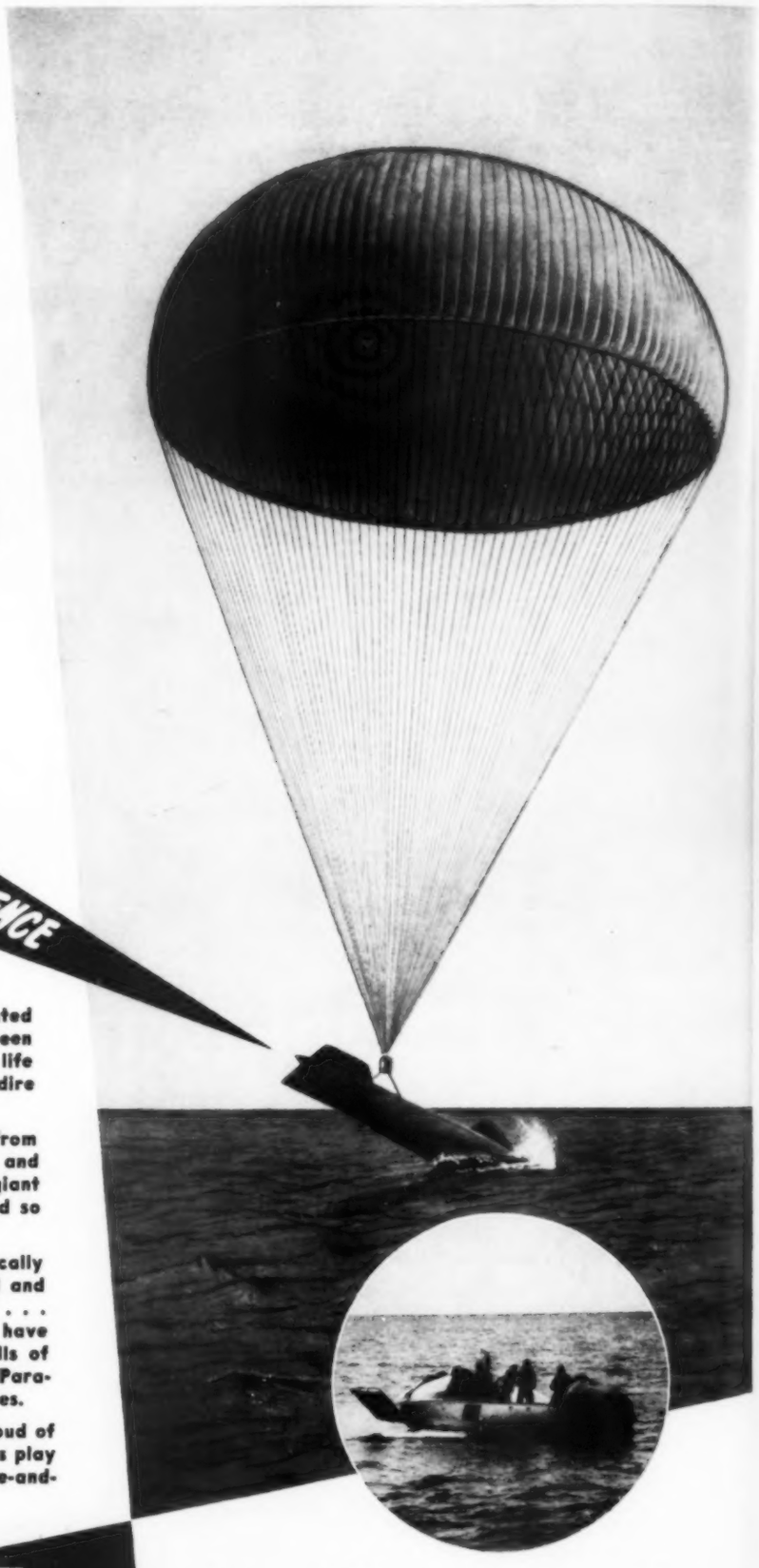
nothing is more important than human life!



PARACHUTES MAKE THE DIFFERENCE

Think of it this way. You've just parachuted from a plane, or your damaged plane has been forced down in an unfriendly ocean. Your life and the lives of your crew mates are in dire peril. Survival seems remote.

But suddenly, a C119 is overhead and as if from heaven itself, an A-3 lifeboat* floats gently and surely down to you under the canopy of a giant parachute. It's a miracle, you think . . . and so it is!

Miracles like this airborne delivery of a critically needed lifeboat . . . or of armaments, food and medical supplies, "on time and on target" . . . are now common practice. The "miracles" have been made *certainties* by the combined skills of the Armed Forces' engineers and Pioneer Parachute Company's vast manufacturing facilities.

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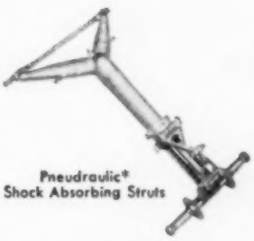
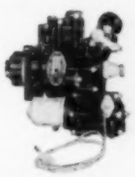
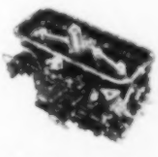


Pneudraulic* Shock Absorbing Struts



Speed-Density Fuel Metering Unit



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Cowboy 'Copter

How a Bell helicopter does the work of 15 to 20 cowhands

By TOM ASHLEY

AIRPLANES at work have proved useful in almost countless ways, especially around farms and ranches. But who ever heard of rounding up cattle from the air, cowboy fashion? The nearest approach has been the use of loudspeakers on lightplanes, the idea being to shout instructions to cowboys below while cruising around low at 50 to 80 mph. Stearmans have sprayed insecticides on bunched herds along the marshy Texas Gulf Coast. But aircraft and airmen have never been able to perform workaday round-up operations with cattle —until now.

The inevitable has come to pass for the first time on the huge, 500,000-acre Waggoner Ranch, which sprawls over some 800 sq. mi. covering parts of 6 counties in North Texas. A helicopter turned the trick—a 3-place Bell Model 47D-1 has not only proved successful in flushing Herefords from mesquite and chapparal but has won enthusiastic praise from cowboys while helping them do a tough job faster and better.

It was big news in the cow country. The Fort Worth Star-Telegram commented like this:

"Herding cattle by helicopter! A few hard-bitten old cowhands probably rotated in their graves, but Will Rogers would have loved it!"

It all started just before the Korean War. A helicopter salesman lined up demonstrations but the project ended in a minor crack-up. Then commercial helicopter deliveries were suspended, the military taking over all production. Last May, J. R. Gray, Dallas Beechcraft distributor, heard that the so-called "stretch-out" in aircraft production might free a helicopter from the Bell Aircraft Corporation's newly-opened Texas plant and obtained delivery of a 3-place Model 47D-1. Despite the pre-Korean demonstration incident at Zacaweista, ranch headquarters, the Waggoner Estate had become convinced that the helicopter would be the answer to its round-up problems, now complicated by cow-

Whirly-herding on the Waggoner Ranch as pictured on these pages pioneers an important new application of the helicopter's usefulness. These Herefords were easily and quickly flushed from heavy brush difficult for cowboys to penetrate.
—(FLIGHT MAGAZINE Photos by E. H. Pickering.)

bog and water shortages. So Gray in turn sold the Bell to the Waggoner operation.

Whirly-herding as a pilot fell to the lot of Sherman Kennedy, who flies the Waggoner Twin Beech. He soloed the 'copter in 6 hours at the Bell factory near Fort Worth, going through its 28-hr. course for pilots before ferrying the flying bronco home. With him he took Gil Eggleston, hired from Bell's flight research department to be in charge of aircraft maintenance at the ranch and to be co-pilot with Kennedy on the Beech.

They had been herding cattle with the helicopter for six weeks when we went to the round-up in Jim Gray's Bonanza to have a look. Kennedy took time out from the herding to meet us in the helicopter at the house, and ferried us to the scene. We found the chuck wagon some 40 miles out from the house in the Zacaweista's yonder reaches, arriving in time to catch the

Here's Ranch Pilot Kennedy in action 20 ft. off the ground. What the pilot sees is shown below, with one of the Bell's skids pointing in the direction helicopter is driving the two Herefords.

Cowboy 'copter starts work with sunrise take-off. Old and new are shown together at right—cowboys in background saddling up fresh horses at midday to replace those used that morning while helicopter lands nearby for refueling from truck. Note famous 90-year-old 3D brand on stabilizer near tail rotor. D's (for Dan, the Waggoner who started the ranch) are reversed in a circle to make obliteration difficult for rustlers.

outfit's 14 cowboys finishing up their noonday meal.

How It's Done

Ordinarily, the day's work for the helicopter is finished by 10:30 a. m., the afternoon being spent in branding, vaccinating and doctoring. Kennedy begins the day at 5:30 a. m., taking off at sunup with the ranch foreman in the helicopter. They fly to the chuck wagon, which is the cowboy's home on wheels for weeks on the open range. By the time of the helicopter's arrival, the men have eaten and saddled up, and after a brief exchange of herd reports, the helicopter moves out into the mesquite on the prowl, while the cowhands follow on their horses. Action on the ground begins in earnest when Ken flushes out the first cattle to be spotted.

He showed us how it works in a brief whirl along the brush tops near the chuck wagon.

"For general spotting, I have a look from about 100 to 200 ft.," Ken explained as he went through the motions. "But to do the work, I get down to within 20 or 30 ft. of the ground where I can head these critters where I want them to go."

We looked under us just as a Hereford was triggered out of a mesquite thicket. From 20 ft. the helicopter pilot could back and fill, slow down or speed up, hover at zero speed or weave and herd that cow as if Ken was on horseback.

There's only one hitch. The "book" says a pilot ought to have one of three "outs" for a safe landing in case of power failure—300 ft. of altitude, 30-mph. forward speed or a 30-mph. wind in which to build up sufficient autorotation for a flared landing. So Kennedy maintains 30-mph. air speed as far as practical when close to the ground, figuring both his speed and that of the wind. If a 20-mph. wind

Chuck wagon with its big canopy is home on wheels during round-up for cowboys, shown here arriving for lunch 40 miles from the house. Pilot Kennedy lands right alongside, the Bell's skid permitting landings on uneven ground, even on slopes

—(FLIGHT MAGAZINE Photos by E. H. Pickering except upper left from Bell Aircraft by Paul Marcott.)

is blowing, as it frequently is, he needs only 10 mph. on his air speed indicator.

His work in the helicopter is always out in front of the cowboys. After he flushes the cattle out of the brush, where they are difficult to reach on horseback, he helps the cowboys bunch them for the drive into a fence corner where the boys perform the branding and other handling.

In the first six weeks of aerial roundup, some several thousand calves were branded. This represents a lot of work on any ranch. The Waggoner outfit averages about 100 calves in its daily branding when rounding up. It takes about 3 hours of helicopter flying to flush that many, or some 115 hours of flying in six weeks.

One 'Copter Equals 15-20 Cowboys

Without the helicopter, cowhands estimated they would have branded only half as many calves during the same period, or would have taken twice as long to do the same job. They figure it this way: Tony J. Hazlewood, who has been with the outfit 40 years and is now the general foreman, estimates the helicopter's worth as being the equivalent of 15 to 20 cowboys—"on good horses in heavy brush."

"With the helicopter in there helping, the cattle turn themselves inside out getting away from under it, out of mesquite thickets a man couldn't ride into even if he could see the cattle shading there," said Tony. "The boys just have to skirt the edges and keep 'em moving toward the branding corner of the pasture while Ken flushes 'em out for them."

Will the cattle ever become accustomed to the helicopter noise and refuse to run from it? The cowboys and Ken think not. After chasing some of them lickety-split with Ken, we agree, although years ago we saw an antelope stop short, turn and rear up and paw at the airplane in which we had herded a bunch, and Les Bowman, who was doing the flying, had to pull up. On another occasion with him, we circled around an 11,000-ft. crag three times, up close, before a couple of big horn sheep we were watching paid us any attention and ambled down into the trees below without getting excited. But these Herefords have never yet failed to take out beneath all the roaring and fluttering of the Waggoner helicopter. They're really wild.

2,700 Miles of Fence to Fly

Doing as much herding as 15 to 20 cowboys is quite a saving, especially when time is of the essence—as in a

(Continued on page 31)

Patrolling 2,700 miles of Waggoner fence and hundreds of water tanks, fed by windmills which must be kept in good condition for livestock, is more effective and quicker by helicopter. House here is for line-rider in remote area.

Simplicity of Honey Bee is reflected in fact that it was designed and built in only 60 days. Low cost is goal, with purchasers able to supply their own used 65-hp. engines. Specialized kits will be offered for wing flaps, full-span slots and trim controls.
—(Beecraft Associates Photo.)

All-Metal Single-Seater

FIRST really-new small plane to fly in recent years is an all-metal, tricycle, 65-hp. single-seater called the "Honey Bee." It was developed and flown in San Diego, California, by Beecraft Associates, Inc., whose founders previously designed "the world's smallest airplane," called the "Wee Bee" and exhibited at U. S. and British air shows two years ago.

Span of the little high-wing is 28 ft., length 17 ft., and empty weight is 550 lbs. It has spring-steel main gear struts and hydraulic brakes. Full particulars have not been released, but the firm has described its first hour and twenty-five minutes of flight testing.

"It took off at about 45 mph., in about 500 ft. of runway and climbed to cruising altitude at about 1,100 fpm.," Bill Chana, president of the company, said. "It made a top speed straight and level of 120 mph., and cruised at 110 using 2,150 rpm. In power-on stalls it was flown down to 35 mph. Both power-on and power-off stall characteristics were exceptionally good with plenty of directional and lateral control throughout. Quantitative flight tests are to begin immediately, after which we will apply for a CAA approved-type certificate. Production is planned for 1953."★★★

Honey Bee is shown below alongside its predecessor, the Wee Bee—world's smallest plane. Firm also has in design a 1-man 'copter, a target drone, a medium-range twin-engine light cargo or passenger plane and a small all-jet, delta wing research plane for prone-position development.
—(Beecraft Associates Photo.)

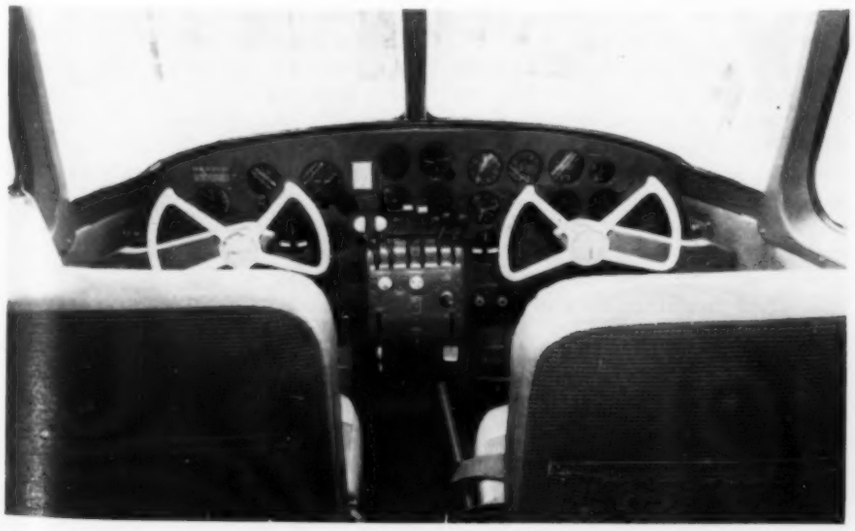
Fred Smith, Aero Commander sales manager for the AiResearch distributorship, poses here with the Morrison-Knudsen Commander to show its special paint job.
—(AiResearch Photo.)

Custom Commander

As deliveries of the new twin-engine Aero Commander near 20 in number from the factory, the 200-mph. light transport's place in the executive aircraft market seems to be more and more one of an auxiliary or stablemate to one or more larger transports already owned by business firms which are taking delivery of the Commander.

This is the case, for example, of an Aero Commander delivered last month to Morrison-Knudsen Company of Boise, Idaho, one of the nation's large construction firms. M-K projects include extensive military air base construction in Alaska, for which the contractor utilizes Beechcraft, DC-3 and B-24 transports in hauling men, equipment and material into project sites. Because of its excellent short-field characteristics, the M-K Aero Commander will add versatility and flexibility to this construction air fleet. Strips bulldozed alongside M-K construction jobs will enable it to get in and out of difficult areas.

AiResearch at Los Angeles, Aero Commander distributor, executed a custom interior and paint job for the 5-place M-K Commander before delivering it. Harry Beerman is the pilot assigned to the M-K Commander, purchased by Morrison-Knudsen's Los Angeles Division. ★ ★ ★



Custom interior includes "plush" pilot seats, which are adjustable. Roominess of cabin is indicated by space between front seats, which are full size.
—(AiResearch Photo.)

Large thermos bottle rack on wall behind co-pilot's seat was installed by AiResearch, with drip-pan for outside drainage. Cabin has 3-place sofa.
—(AiResearch Photo.)

A 300-mile trip in a Jenny meant two stops en route—one from engine failure and the other to refuel. This one was not for gas.

No More Forced Landings

Single-engine flying has come a long way in 15 years of progress

By BOB WEMPLE

ILLUSTRATIONS BY JOHN JAMES

THE other day, someone asked us how long it had been since we had a forced landing. Landings due to low oil pressure, overheating, excessive vibration, weather, etc. did not count. What our friend wanted to know was how long since we had been forced to land by the engine quitting—an immediate decision followed by a dead-stick landing in the best open space available within gliding range.

Although still alert at all times for that open patch to put down in, we were amazed at the realization that it had been 15 years since we had been forced to make a dead-stick landing. Since we have averaged 400 hours of flying per year since then, that meant we had gone nearly 6,000 hours, or some 750,000 miles, in single-engine airplanes without a forced landing. The more we thought of this, the more remarkable it seemed—no emergency landing in 6,000 hours!

Our thoughts went back to that almost forgotten incident. It wasn't due to motor failure at all—it was a forced landing from running out of gas! It wasn't a difficult landing, either. When the engine quit, we were at 18,000 ft., doing a mapping job. We had plenty of time to pick out a spot. In fact, we had a choice of several airports from that height. We put in at Little Rock and had a long time on the way down to ponder over our stupidity at not having re-checked our fuel supply after the ship had been serviced prior to beginning the hop. Since then we have never forgotten to check after every servicing.

"Yes, but when was the last real, genuine emergency landing?" our friend insisted after hearing of this one.

We had to dig pretty deeply into our early days of flying and consult our old log books, wherein it was our habit to record everything that happened in our flying, including some interesting telephone numbers. Going back to the early 20's, we found the kind of reality our friend was looking for. In those days, dead-stick landings were a frequent and almost normal occurrence. As we thumbed through our log entries relating to hops in Curtiss OX5's, Hisso's, Curtiss K-6's and C-6's, Anzani's, Salmson's, Hall Scott's, and later the Wright J-4's, Kinner's, Warner's and Velie's, our refreshed memory clearly recalled the fact that a 300-mile trip could hardly be completed without at least two landings in between—one for fuel and the other one to work on the engine, which usually quit at least once on every cross-country.

One old entry showed three dead-stick landings in one day: No. 1, gascolator filled with dirt; No. 2, broken spring in magneto points; No. 3, broken gas line. A forced landing was all in the day's work.

It was foolish to start a trip behind an OX5 without a spare magneto breaker assembly in your pocket. With this, you could make your forced landing, replace the broken assembly,

and be merrily on your way again in a matter of 15 or 20 minutes.

In the process you got to acquire considerable judgment about forced landings. You not only wanted to put down safely, without breaking anything, but you also wanted to be able to take off again after you made the necessary repairs. So you remained alert at all times for wind direction, terrain, crops, available open fields, obstructions and the like. A pilot who put his aircraft into a patch and couldn't fly it out again after fixing it was definitely below par. He literally didn't go very far.

Forced landings came at most inopportune times. They would happen as frequently while hopping passengers around town as they would on a cross-country. With this kind of a situation, you began looking for likely landing places the minute you got over the fence on your take-off, and you never stopped this searching until you were back on the ground. Now, years later, we find ourselves doing this automatically. Having been a necessity once, this habit of being constantly alert seems to have become a permanent part of our flying. Even after 15 years without a forced landing, we still keep one eye on possible landing sites on every hop.

Why all the engine failures in earlier days? Beside the lack of mechanical developments and cumulative refinements in motor experience, the truth is that preventive maintenance was practically unknown. Such important procedure as 25-hr. and 100-hr. checks had not been "invented" or "discovered." The custom was to fly and fly and fly until the motor lost a couple hundred revs, or until it quit. Then something was done—at the last possible moment.

An engine which wouldn't rev up usually needed a valve-grinding job—on one cylinder this week, another next week and each time under a different shade tree.

There was the time we were going from Knoxville over the mountains to Asheville, a little over an hour's flight. The OX5 in our Jenny was revving up okay, so off we went over the hills. About 80 miles out—almost at our destination—and 1,000 or 1,500 ft. over the terrain, the engine quit. We already had a ridge in sight when it happened, a ridge where a farmer was plowing. He had an open space of about 800 ft. in length, and this patch stood out from all the trees so that we couldn't miss spotting it. But we overshot, our wheels dropping into the last furrow.

Slowly the tail came up, and very slowly we went over on our back. The farmer helped us out from underneath, and reassured us. "Young feller," says he, "that was the purtiest landing I ever saw." Apparently he thought it was a skillful thing, to ease the tail up and over. Later, he admitted he had never seen an airplane land before. With his son and a helper, we got the Jenny right side up. The only damage was a couple of broken cabane struts

(Continued on page 36)

Sometimes we couldn't postpone a tune-up but had to land and make repairs on the spot, being careful to find a patch big enough for immediate take-off.

For Better Instrument Flying

First installation of the new Collins integrated flight system

NUMEROUS developments perfected in airline and military operations have been adopted by executive flying, but aviation's newest advancement is being utilized first by executive aviation—the new Collins "integrated flight system" for more precise low approaches in ILS flying and for simpler omni navigation under instrument conditions.

First installation of the new Collins system, scheduled for later airline deliveries, has been made by Associated Radio Co. of Dallas, Collins distributor widely known for the executive aircraft work of its three partners, Tony Aguilar, Carl Fox and Lee Lanford. They made the pioneering installation in a converted B-25 owned and operated by Albert Trostel and Sons of Milwaukee, Wisconsin, a large leather processing firm which also operates a Beechcraft Bonanza in its far-flung business flying.

Tom Neyland, Trostel's chief pilot, describes the new Collins installation as a "pilot's dream." He said it gives the pilot a clear pictorial presentation, on fewer instruments, of all the information he needs for precise ILS flying and en route navigation—"the most complete and simplest instrumentation yet perfected to assist pilots in overcoming the problems of low approaches."

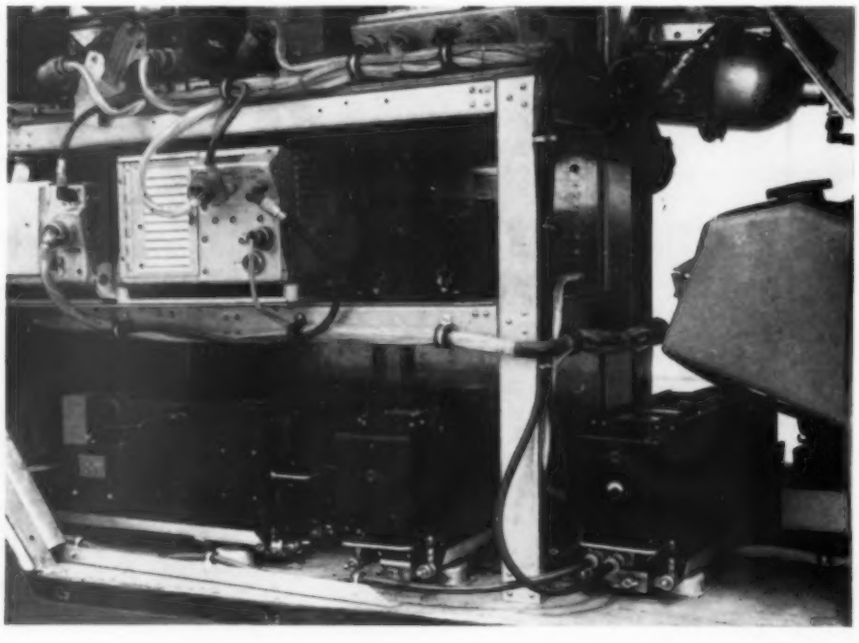
What it is and how it is used are indicated in the accompanying illustrations. To assist the pilot, the Collins system accomplishes three major goals: (1) Pictorial presentation of aircraft position with regard to the selected course, (2) simplified instrumentation, and (3) reduction in the number of basic instruments.

Since Neyland's B-25 already had been fitted with a Gyrosyn compass, glideslope receiver, LOC/VOR receiver and its power unit and frequency selector, and appropriate antennas, installation of the new "integrated flight system" required the addition of only 29.3 lbs. of new equipment, as follows: A Collins Steering Computer (11.5 lbs.) and its shockmount (2.8 lbs.) and a Collins Vertical Gyro (5 lbs.) and two new instruments, the Collins Approach Horizon (2.5 lbs.) and Collins Course Indicator (7.5 lbs.).

One of the system's major components is the Steering Computer. In an approach, for example, signals are continuously fed into the Steering Computer from the aircraft's localizer receiver, compass and vertical gyro for computing instant by instant. The resultant steering information is fed by the Computer into the Approach Horizon, being presented to the pilot in the form of left or right deflection of the steering pointer. Thus the steering pointer tells the pilot to execute simple turning maneuvers to get the aircraft on course and keep it there. Between the outer marker and the runway, the steering computer *automatically corrects for the effect of crosswind and eliminates this factor for the pilot to consider in making an approach.*

Both the Approach Horizon and Course Indicator are remarkable instruments in themselves. A roll and pitch reference, similar in appearance and function to a standard artificial horizon, the Approach Horizon incorporates position information with respect to the glideslope, and steering information for precise ILS approach flying. A small airplane in the center of the instrument serves as a pitch indicator, moving up and down as aircraft attitude is changed. A horizon

Collins Approach Horizon



Black boxes in Trostel B-25 nose radio rack are new Collins flight system units and receivers and transmitters. Flight group on instrument panel below shows Collins Approach Horizon and Course Indicator side by side.
—(Associated Radio Photos.)

bar and bank indicator function as in a conventional horizon. On the left side, a pointer moves vertically to picture the aircraft's position with respect to the glideslope—descent on the glideslope is accomplished simply by matching the pitch indicator to the glideslope pointer.

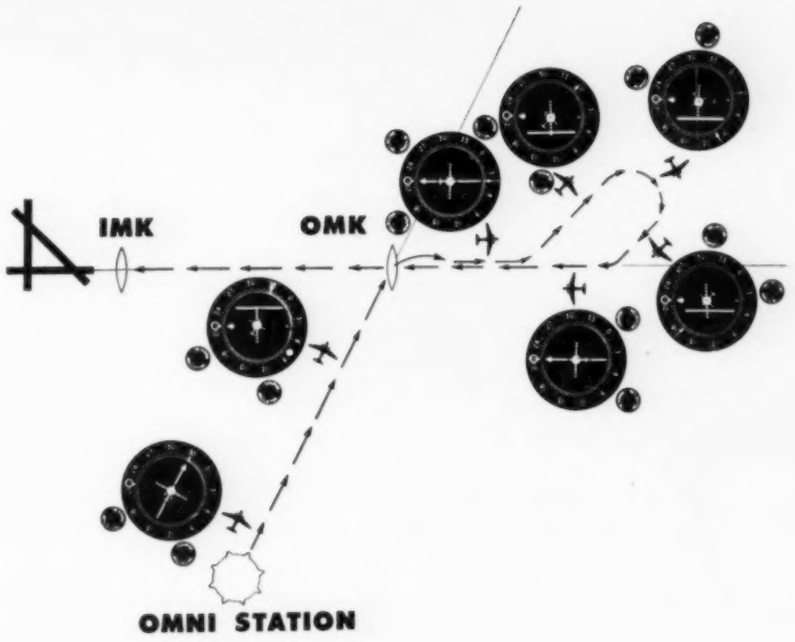
The Course Indicator is a directional reference or a compass card which has superimposed upon it a properly oriented pictorial presentation of the aircraft's heading and displacement in respect to the ILS or omni course. For ease in flying selected headings, the card is provided with a marker which may be set by means of the heading selector knob. This marker, riding with the card, shows the amount and direction of deviation from the selected heading.

Collins Course Indicator

A graphic picture of the aircraft's heading and displacement with respect to selected localizer or omni course is provided by the inner portion of the Course Indicator. To select any localizer or omni course, the position indicator is rotated by the course selector knob to the desired course indicated by the arrow pointer read against the compass card. The position indicator then rotates with the card as the aircraft heading changes. Left-right deflection voltages from the aircraft's localizer or omni receiver cause the instrument's course-line bar to move across the face of the instrument, thus showing the aircraft's displacement from the selected course. Since the bar also rotates as the aircraft's heading is changed, this bi-directional motion causes it to simulate exactly the selected course with respect to the aircraft. It shows both displacement of the aircraft from the selected course and direction of the course with respect to the aircraft heading.

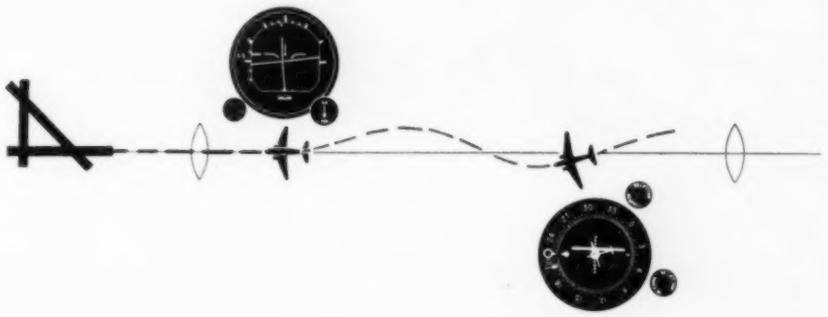
"TO" and "FROM" indication for flying VOR courses is provided by an indicator which appears on the appropriate side of the instrument's center. If the course chosen is "TO" an omni range station, the indicator will appear on the broad arrow side on the center.

Such a pictorial presentation of course-line deviation information elim-



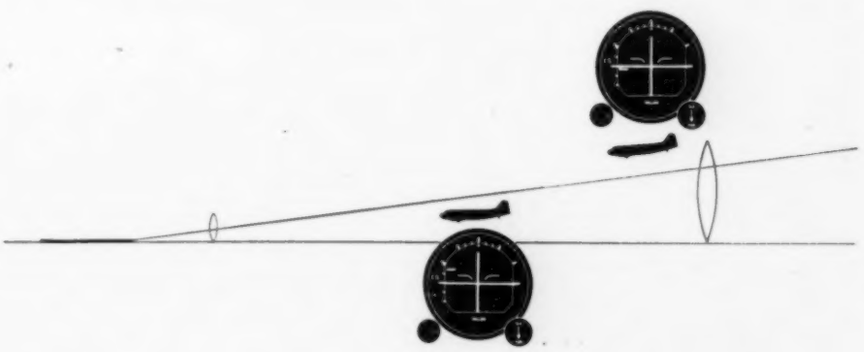
INTERCEPTION OF LOCALIZER COURSE is traced above on the Collins Course Indicator. From the omni station, the pilot is shown flying outbound on a track which intersects the outer marker. At or near the outer marker, he sets in on the Course Indicator the localizer course and runway bearing, makes a turn to the right and flies outbound along the localizer course for a procedure turn to begin his inbound flight toward the outer marker. Note how the course-line bar simulates the localizer course with respect to aircraft heading, providing a "picture" of aircraft position relative to the course.

—(Collins Radio Sketch.)



ILS APPROACH WITH COLLINS INTEGRATED FLIGHT SYSTEM is depicted above for the localizer and below for the glideslope. Bracketing difficulty, in systems using only displacement information from receivers, increases as the runway is approached, but the Collins system overcomes this difficulty by adding steering information to the flight system. Signals from localizer receiver, compass and vertical gyro are continuously computed for the pilot, who makes only simple turning maneuvers to keep the steering pointer centered. Sketch below shows Approach Horizon "picture" for positions above and below the glideslope.

—(Collins Radio Sketches.)



inates the sensing and ambiguity problems associated with the usual type of cross-pointer indicator. To intersect a course, it is only necessary to fly the small airplane in the center of the instrument toward the course-line bar. This is true even in localizer service, regardless of whether flight is inbound or outbound on either the front or back course of the localizer. This simplification is an accomplishment of great significance in increasing the safety and dependability of instrument flying.

While the steering computer feature (vertical needle on the Approach Horizon) is not employed for flying an omni course, it can be used in flying compass headings on cross-country trips. With the right hand knob on the Approach Horizon in the "HDG" position, steering information with respect to heading (as selected by the Course Indicator) is presented on the steering pointer, and to maintain his heading it is only necessary for the pilot to maneuver the aircraft to keep the pointer centered.

Of major importance, the Collins Approach Horizon provides flag warning services to signal improper functioning of the ILS and VOR receivers. Proper operation is indicated when the flags are not in view. Warning flags have been used on separate instruments before, but this is their first use on an indicator incorporating several instruments in one presentation.

After Associated Radio arranged a demonstration of the new Collins integrated flight system by Jim Flynn, Collins commercial sales manager, in the Collins Twin Beech, we checked with Tom Neyland to see how his pioneering installation was performing.

"Low instrument approaches are a cinch with the Collins instrumentation," Neyland said. "With the Course Indicator, we can *see* the localizer course and runway bearing as the instrument *pictures* it—we know where we are in relation to the course at all times, without all the work formerly required to intercept a localizer course. There's no more working to bracket the localizer once we're inbound, either. The Approach Horizon's greatest contribution to our flying is the steering information it furnishes. It automatically does all the computing we formerly had to do in our head, and it can do this a whole lot faster and more dependably than any pilot."

What Neyland was saying adds up to this: More complex landing and navigation aids tend to increase the amount of cockpit work for pilots using those aids in all-weather flying—but the new Collins system frees the pilot from a lot of physical and mental performance and allows him to do his essential job of *flying* and to fly more effectively. The less cockpit gymnastics and confusion, the better flying job a pilot can produce.

He and his co-pilot, Phil Bales, keep their B-25 at top-notch readiness for the company's extensive travels on business. With headquarters in Milwaukee, most of the B-25's flights fall into a pattern stretching from Milwaukee to Boston, New York, Nashville and St. Louis. Last year the B-25 logged 733 hours. This is some 200,000 miles of travel in 12 months—a heavy schedule for the expanding and growing Trostel business. In 1950, it logged 540 hrs.

Converted 6 years ago as the company's first airplane, the Trostel B-25 has seat belts for 13 occupants including the crew. Another B-25 was purchased at the same time for spare parts, but it was disposed of when experience proved such a supply of spares was not needed. Range is 1,700 miles and a year-round average speed of 285 mph. can be charted for it. Much better time is available at altitude, and for this Neyland has an extra large supply of oxygen—he uses welding tanks of it, since weight is no problem (the Trostel B-25 has never yet approached its maximum gross, being able to carry everything at a gross several thousand pounds below the maximum). Mr. Trostel, the boss, likes high altitude flying for its speed advantages and Pilot Neyland says the B-25 will indicate 210 mph. at 25,000 ft. with fuel consumption at 145 gals. per hr. This trues out at about 330 mph.

Operations such as this demand a high standard of reliability. Latest

(Continued on page 34)

More Efficient Seaplane Hulls

The trend in continuing flying boat studies is toward higher length/beam ratios for their hulls. This was 5 to 1 on the famous PBY, 6 to 1 on the PBM, 8.5 to 1 for the P5M and 10 to 1 for the latest Convair P5Y. Pictured above is a new hull which exceeds them all in length/beam ratio—12.5 to 1. The airplane is a Navy Grumman Widgeon onto which was bolted an experimental hull designed jointly by the Navy Bureau of Aeronautics and Convair and built and flown by Edo Corporation for the Navy.

Edo says the higher length/beam ratios achieve such results as (1) less drag for better aerodynamic performance; (2) less water drag for better take-off performance; (3) less spray; (4) far better rough water ability; and (5) less wasted hull volume which means less structural weight. ★ ★ ★

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Dal-Tex Aviation, Inc.
Highland Park Airport, Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
New Municipal Airport
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airport
Midland, Texas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

CESSNA CASE HISTORIES

G. B. PACE, HUNTINGTON, WEST VA., vice-president of Pipeline Construction & Drilling Co., says, "Servicing a number of branch offices is difficult enough, but when they constantly move around—well, you can imagine our problem!" By "branch offices" Pace means current drilling jobs—and out of 10 projects, only 3 are permanent! He solved the knotty travel problem with a Cessna 170, now says, "We just couldn't operate without it!"

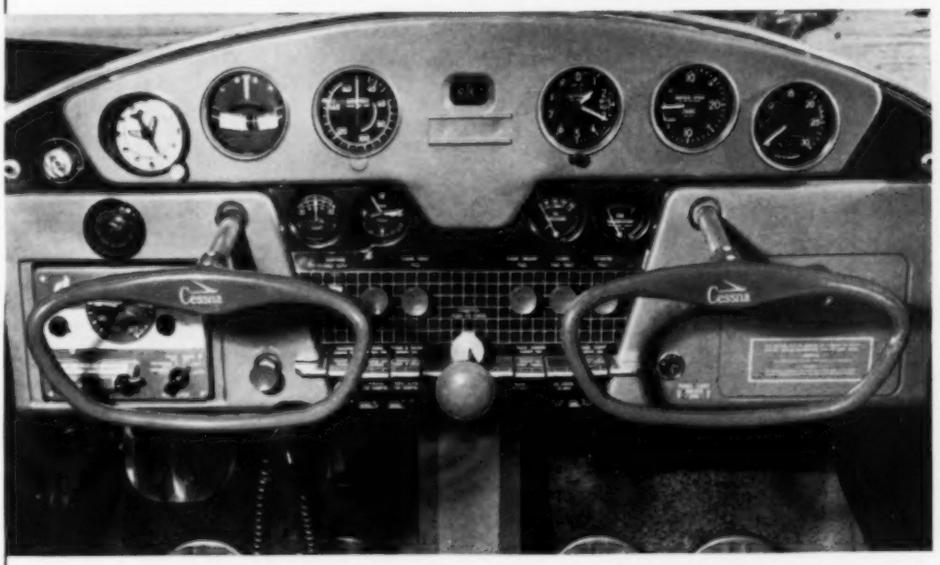
The plane is also used for transporting personnel and repair parts, patrolling pipelines and aerial photography. The firm recently bought 3 more Cessnas! Pace says, "We've never had a repair bill on any Cessna! We like their speed and all-metal construction, and our planes are comfortable even on long trips to Wyoming!"

ROY N. SIMMONS, ABILENE, KANS., bought a Cessna 170 on doctor's advice! As a CPA, he drove thousands of fatiguing miles a year to distant accounts *before the Cessna.* "Now," he says, "I fly to clients in Wyoming in 6½ hours, to Kansas City in 1¼ hours and to Harrisburg, Pa. in 10 hours (3 days by car!). Our 170 is ideal for easy traveling!"

Mrs. Simmons also flies, says, "Just from a health standpoint, our Cessna is invaluable. It handles so easily!" She flies to TB Assn. and "Ninety Nine" meetings. Their 170 is also used on vacations, and for flood relief. The Simmons' praise Cessna's visibility, roominess and economy, say, "We fly it for only 7.5¢ an hour, plus fuel!"

At Your FINGERTIPS

WONDERFUL POWER AND CONTROL!



No other airplane offers as much for your money . . . in room, comfort, luxury features. But you'll like best the way the Cessna 170 responds to your control. There's power aplenty in that smooth 6-cylinder, service-proved Continental engine and Cessna engineering gives you finger-tip handling. She lifts from the landing field more quickly—responds instantly in the air—lands more slowly and smoothly. Yet this 4-place, all-metal, luxury-fitted airplane costs only $7245 f. o. b.* Wichita. Fly it and you'll buy it!

*With standard equipment. Prices subject to change without notice.

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A Cessna exclusive **. . . new, remarkably BIG flaps that shorten take-offs, reduce your landing speed more than 10%! They make useful airports of many short, rough pastures and fields. And—on the new Cessna 170—they're *standard equipment!***

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Faster
than a cup of coffee

Lockheed Starfires

destroy an air invader

Incredible—but in less time than the few minutes it takes to drink a cup of hot coffee a Lockheed *Starfire* (F-94C) can

Take off from a cold start—
Climb 7 miles up in any weather—
Locate enemy bomber automatically—
Destroy the invader, without ever seeing it.

Furthermore, the 2-man crew need never have seen the bomber they destroyed.

Today these all-weather jet interceptors are being delivered to the U.S. Air Force for 24-hour duty guarding U.S. borders and key cities. It gives the Air Force a fast-climbing jet fighter that is almost automatic—forerunner of planes that may actually fly and fight by themselves.

The *Starfire's* brain center can locate invading bombers on the darkest, stormiest night. Its unique all-rocket armament can destroy the biggest bomber built.

The *Starfire* is another example of Lockheed design "stretch"—an engineering achievement of creating a more advanced model out of an existing airplane. This speeds development and production, also cuts cost. Forerunner of the *Starfire* is the Lockheed F-80 *Shooting Star* of Korean fame. Lockheed is the world's leading builder of jet aircraft.

Lockheed
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Look to Lockheed for Leadership

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STARFIRE NEARLY AUTOMATIC FIGHTER

On the opposite page you see illustrated in action the nearly automatic Lockheed *Starfire* (F-94C). This all-weather jet fighter is an electronics masterpiece with an interesting development history.

The "C" is the third in the *Starfire* series and is now being delivered to the U. S. Air Force to augment squadrons of F-94A's and F-94B's now on 24-hour duty as protection for such key cities as New York and Washington.

The evolution of the *Starfire* actually dates from the spring of 1945, when Lockheed developed America's first operational jet fighter, the F-80 *Shooting Star*. From the F-80 came the T-33 two-place jet trainer now used to train 9 out of 10 U. S. jet fighter pilots (also pilots from 9 other nations).

In turn the T-33 was redesigned to incorporate the most advanced electronic equipment known as well as some unknown devices that had to be specially invented. This became the U. S. Air Force's F-94 *Starfire*, now developed to the point where it both flies and fights with more than human accuracy. It has an all-rocket armament—no guns!

Electronics innovations include the Westinghouse Autopilot and Sperry Zero Reader. It is one of the few fighter-type planes equipped with ILS (instrument landing system) for low-visibility landings. *Starfires* pack 1200 pounds of electronics, compared to 168 pounds of radio in the Lockheed P-38 of World War II.

The *Starfire* is the first production aircraft to fly with the new Pratt & Whitney J-48-P-5 jet engine. Its afterburner provides extra power for rapid take-off and extra performance in battle.

The F-94C is the largest of the original Lockheed jet series. The statistics: take-off weight, over 20,000 pounds; length 41 feet, 5 inches; wingspan, 37 feet, 6 inches; height, 13 feet, 7 inches.

A pioneer in the jet field, Lockheed has produced more jet aircraft than any other manufacturer.

COWBOY 'COPTER

(Continued from page 19)

prolonged dry spell when the water tanks are drying up—but there are other ranch values in the Bell helicopter operated by the Waggoner outfit. The machine is useful in "riding" the ranch's 2,700-odd miles of fence, for example. Such a fence-ride is the equivalent of flying from Seattle to Miami, which would also represent a lot of barbed wire and fence posts. It takes a good fence and plenty of it to handle the cattle on the 500,000-acre Waggoner layout, and frequent inspection is necessary to keep it in good repair. Helicopter patrol has greatly simplified this big task, for whenever a wire is found down or a post out, the helicopter can drop in alongside, land and allow a worker to make repairs then and there. Nobody knew just how many cattle the ranch owns, but 15,000 was a good guess.

There has not been time because of the continuing round-up, but other Waggoner jobs for the helicopter are expected to include such interesting projects as wild game surveying and aerial warring on predatory animals. Coyotes and wolves are a menace to stock as well as game and must be dealt with, and the ranch's own staff of game wardens will find the machine useful in looking after their deer and turkey. Patrol of water tanks, each a miniature lake fed by a windmill, is also essential. These tanks are usually stocked with fish and when one begins drying up, steps can be taken either to restore the well or to move cattle from the area and remove fish from the tank before it becomes polluted. Where it used to take 3 or 4 days to check all the tanks, this is done by helicopter in 3 or 4 hours.

There is helicopter work to be done, too, among the fabulous oil field developments inside the huge Waggoner domain. New wells are constantly being drilled and old ones maintained; one of the big jobs is picking up core samples from the drilling rigs for analysis. These small and lightweight samplings are gathered by the hundreds and helicopter pick-ups will greatly expedite their handling. Then there are the follow-up inspections which are made after wells are drilled—slush pits have to be filled and graded off so that the area can be returned to grass for cattle grazing as soon as the flow of oil has been established. Oil or no oil, the ranch foreman wants to make sure about this grass, so he will follow it up personally in Kennedy's helicopter. Then there is a sizeable ranch operation devoted to cultivation, mostly wheat—some 30,000 acres of it. Combines in need of parts and quick repairs in the field can be serviced by helicopter to save precious harvests. There is one wheat field on the ranch that is 11 miles long and up to 4 miles wide.

Aside from its work values, the helicopter came rather naturally to be a part of the Waggoner Ranch. It has been widely known for years as a "mechanized" operation, using fleets of trucks, cars and Jeeps wherever the horse can be replaced.

Serial number of the Waggoner Bell is 482 and it is the 181st commercial machine sold by Bell, which was the first manufacturer to obtain CAA airworthiness certification for a helicopter. The oldest commercial Bell now in operation is N10H, manufactured in 1948. Operated by New England Helicopter Service at Hillsgrove, R. I., it now has logged 3,200 hours and is still going strong. Some 300 pilots have been trained on it.

Helicopter people have felt all along that rotary-wing craft would be useful in cattle work on ranches because of its hovering, sideways and backwards flight and slow speed characteristics. But it remained for the Waggoner Ranch to prove this in actual operations as a bona fide helicopter owner. Other ranches the world over are expected to investigate the advantages of the helicopter in working cattle as the result of this success.

One of many incidents establishing the 'copter's usefulness was pointed out by R. B. Anderson, general manager of the Waggoner Estate.

Home On the Range—For Keeps

"The other day we had readied on short notice a shipment of cattle for buyers who were waiting at the pens," he said. "The helicopter had delivered them out of the brush to the cowboys, and the cowboys had penned them for loading into the buyers' trucks. After all had been weighed and counted, we suddenly realized 50 were missing. In a matter of minutes the helicopter had spotted them in the nearby brush, the cowboys loaded them and the trucks left. Without the helicopter, the cowhands would have had to work an entire pasture of several thousand acres to locate the 50 animals. In this case we would have missed the sale, for the trucks would have had to leave before the strays could have been rounded up."

Skilled cowboys are "the scarcest item in the labor picture," Mr. Anderson pointed out. This was a major factor in the Waggoner decision to utilize a helicopter. The rancher was enthusiastic over his helicopter's success as a livestock working tool.

"We are firmly convinced that re-

Economy!

Talk about enthusiasm, talk to a Piper Pacer owner! He has good reason to rave. He has a comfortable airplane for four people. He has range and climb and a solid ship that takes the jolt out of rough air. Yes, he's getting performance, and he's getting it with economy. That's why he's enthusiastic.

No other plane owner gets four-place transportation as inexpensively as the Pacer owner. The lower initial cost means less hourly depreciation. The lower horsepower needed by Piper's compact, efficient design means less gas consumption. The new Piper Duraclad finish and service-proven features of Piper planes means lower plane maintenance.

Yes, the Pacer matches performance and utility with economy. A happy combination which makes happy owners.

Ask one of the firms listed to demonstrate how one of the Piper models can save you valuable time and money. These firms are prepared to serve all your aircraft requirements.

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Oklahoma
SMYER AIRCRAFT SALES & SERVICE
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Ponca City

Texas
BROWN FLYING SERVICE
Municipal Airport
San Antonio

PARKER-HUETT AVIATION COMPANY
White Rock Airport
Dallas

SOUTHWEST AIR RANGERS
Municipal Airport
El Paso, Texas

WICHITA FALLS AIR TRANSPORT COMPANY
Municipal Airport
Wichita Falls

sults already achieved with the Bell helicopter have more than justified our investment in it," he said. "It has proved itself as one of the most worthwhile investments the ranch ever made."

All sorts of jokes are made over the ungainly-looking helicopter, as could be expected. Even Larry Bell, the manufacturer, has called the helicopter "aviation's ugly duckling, which, despite its looks, has had a greater and quicker acceptance than any form of transportation the world has ever known." Cowboys at Zacaweista now have an intimate feeling for it, too. "Egg-beater" as a name for it came easy to them. After chuck, we were sitting on the bank of a tank with some of them as Ken fluttered by after a yearling. "Now ain't that the dangedest lookin' critter you ever saw?" asked one named Windy, laughing. Another one called it a "hilla-monster," likening it to the chunky lizard known as the Gila Monster in the Southwest.

But asked how they felt about having a helicopter herding cattle for them, they all agreed it was the answer to a cowboy's prayers. "We may joke about that crazy thing, but we hope it never breaks down—we want it to just keep right on herdin', because it gets cows outta brush we can't get into on our hands and knees," Windy explained as spokesman. "It's right pleasant riding along behind ole Ken up there; we don't get near as scratched up and all we have to do is guide 'em to the fence after he gets 'em to runnin'." Even the cook was enthusiastic. "Best contraption I ever saw and I've been herdin' chuck wagons since 1914," he said as we poured a big cup of his coffee to wash down a helping of ranch beans. ★ ★ ★

Airmen's Calendar

Aug. 17—Second Annual Rice Festival Fly-In with free lunch to visitors, Eagle Lake, Texas.

Aug. 19-30—19th National Soaring Contests, Grand Prairie, Texas.

Aug. 27-30—National Flying Farmers Convention, Alabama Polytechnic Institute, Auburn, Ala.

Aug. 30-Sept. 1—Fifth Annual International Aviation Exposition, with Continental Trophy Race, Wayne Major Airport, Detroit.

Oct. 9-10—Annual Airport Management Operations Conference, University of Oklahoma, Norman, Oklahoma.

Oct. 11-18—4th All Texas Air Tour.

"Here's Why We Chose the Piper Tri-Pacer"

Mr. Bowen Campbell, Pres. Campbell Heating Co., Des Moines, Ia., Manufacturers of heating equipment for large buildings and grain dryers, tells why his firm has bought two Tri-Pacers.

Mr. Bowen Campbell, President of the Campbell Heating Company, Des Moines, Ia., is typical of thousands of business executives who have learned the value of a company plane to step up sales and speed customer service. Mr. Campbell and other company personnel flew their first Piper Tri-Pacer over 50,000 miles in less than a year with such satisfactory results they are now flying their second Tri-Pacer.

Because the Tri-Pacer combines performance, flying ease and utility *with remarkable economy,* the Tri-Pacer is the natural choice of many business executives.

FLYING EASE — "Anybody can fly the Tri-Pacer," says Mr. Campbell shown here with his son Crom who also flies plane for company. "With its tricycle gear and simplified controls, it is ideal for the businessman pilot. And ground handling's so much easier, especially in high winds."

COMFORTABLE TRANSPORTATION — "The Tri-Pacer is ideal transportation. It's quiet, comfortable, gets us where we're going with minimum fatigue. We average better than 120 mph."

UTILITY — "We make service calls as far away as Georgia and Oregon and the speedy service is greatly appreciated by our customers. The Tri-Pacer's big cargo space with the rear seat removed is ideal for handling bulky items such as parts for our heavy industrial burners. All in all, we find the Tri-Pacer an extremely versatile airplane, fast yet economical, easy to fly and reliable."

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For FREE brochure on new 135 hp Pacer and Tri-Pacer, write PIPER AIRCRAFT CORP., Lock Haven, Pa., Dept. 8-F.

INSTRUMENT FLYING

(Continued from page 26)

communications and navigation radio equipment are considered a "must" by Trostel. Hence Neyland's immediate adoption of the new Collins integrated flight system—he was quick to arrange for the first installation of the new instrumentation. For this job, Tony Aguilar and Carl Fox of Associated Radio went to Milwaukee from Dallas, and the home office of Collins Radio at Cedar Rapids, Iowa, gave the project fullest possible cooperation. Since Aguilar and Fox had already wired the B-25 for the instrumentation back in Dallas when installing other new Collins equipment which preceded availability of the new devices, the work in Milwaukee was completed in less than 4 man hours.

Equipment considered as indispensable by Neyland is checked thoroughly every 6 months, as is the airplane itself. Preventive maintenance, Neyland calls it—he has never had to cancel a trip in almost 3 years of B-25 operations. Periodic radio checks are something relatively new for many executive pilots, although some of Associated Radio's customers, such as Neyland, have practiced it for years. Neyland's is a case which proves the value of this system, which consists of (1) getting the best possible installation when the equipment is originally installed and then (2) keeping the equipment in top-notch operating condition through regular checks so that possible sources of malfunction can be detected and corrected before they develop into failures. This periodic servicing also provides scheduled opportunities for any alterations or modifications which operating experience may justify.

"My experience has worked out so perfectly that I go from 6 months to 6 months with never a malfunction or loss of performance in my radio equipment," Neyland said. "It all adds up to safest possible, dependable air transportation for my company. After all, safe and dependable travel is what my company is interested in—when we have to go, we go—without exception. That is transportation with a capital T."

For other executive airmen interested in the prospects for deliveries of the new Collins integrated flight system, FLIGHT MAGAZINE checked with Collins and learned that 50 of the systems will be produced during 1952, of which 40 have already been sold, and that the production rate for 1953 has already been specified at 1,000 systems. Orders at a rate of some 10 per month during the four months of order-taking are rapidly increasing.

★ ★ ★

NATIONAL INTERCOLLEGIATE AIR MEET winners are shown in these pictures from Oklahoma A. & M. College where it was conducted recently. At lower left, Grover Loening is with Lloyd Milner, MacAlester College, who won Loening Trophy, and Bill Covin, Oklahoma A. & M., runner-up. Oklahoma A. & M. (left) and University of Minnesota flight teams are shown above. Eight colleges and universities were among winners of trophies and awards offered by leading aviation firms and enthusiasts.

JUST AMONG OURSELVES

(Continued from page 10)

win wars with a "shoestring" air force. Otherwise the record of air power in Congress and in Korea would be much different.

As productive and as far-reaching the results of the Aviation Writers' 1952 annual convention might be, we still don't believe such infrequent briefings are the answer to the dilemma of an uninformed public and a vacillating Congress. It's just plain impossible to develop competent military aviation writers by occasional visits to factories, test and research centers, proving grounds or tactical bases. At best it is superficial, just a little bit better than sitting at the desk mulling through military and industry handouts.

Our military leadership has done little or nothing to develop pure, competent military aviation writers. Some time back this column pointed out how the Navy, over a period of years, had developed an able naval writer in Mr. Hanson Baldwin of the *New York Times*, and how major foreign powers had consistenly produced bona fide scholars in the field of military aviation journalism.

It is our firm conviction that the U. S. Air Force can and must investigate the possibilities posed by the idea, even though the long-range development of military aviation writers would require a complete overhaul of present USAF public and press relations policy and thinking. The raw material certainly is available—competent writers who are ready, willing and able to start the long grind if only the opportunity is made available. Until it does become available there will remain a tragic gap between military aviation and the masses of American people whose fate now hangs in the balance, periously swinging on threads of ignorance and fear—and a shoestring air force.

Individual Responsibility

THERE is only one cause for many of the mid-air collisions which are plaguing aviation. It is simple carelessness. The simple remedy is for every pilot to realize his individual responsibility at all times and keep an eye on the other fellow, especially near airports. ★ ★ ★

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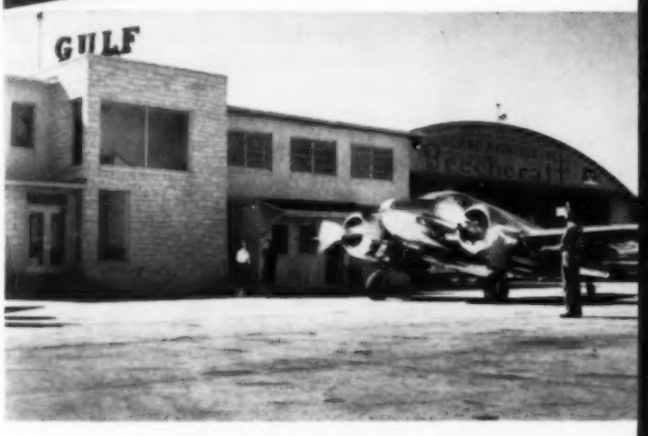

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NO FORCED LANDINGS

(Continued from page 23)

on the upper wing and a slightly bent rudder. We took off the broken cabanes and gave them to the farmer's boy as a souvenir, replaced the broken spring in the magneto, and took off. At Asheville we were only one hour late, and a friend who met us accepted the lateness as part of the game—little did he realize we had been down on the ridge on our back during that hour. We didn't tell him any differently, either.

Sometimes a heavy rain would cause engine failure and a forced landing, the water fouling out the magneto. But we got through one downpour without a hitch. It was in another OX5 Jenny, and in the front seat we had a friend, Ben Faulkner, another barnstormer. We were flying him from Richmond to Baltimore, where he had left his ship. As the rain started, Ben got worried and tried to persuade us to turn back. But we kept right on, having by now become accustomed to forced landings. One more would be meaningless. Then it rained harder. Old Ben climbed out on the wing, got out his seat cushion, and tucked it around the magneto. He got soaking wet, but the seat cushion did the trick.

Sometimes, to be truthful, these frequent forced landings got us into real trouble and proved to be more than a mere inconvenience. Flying the mail once, we had a Wright J-5 on a Pitcairn Mail Wing quit on us. It was just about midnight, about 45 minutes out of Washington en route to Richmond—just far enough to get into some rough country. We had 3,000 ft., and when it happened we popped the first of our three flares. Sure enough, there was a big open field, almost under us. In our 360, we popped the second flare at 1,500 ft., and went on in for the landing. Then, just off the ground, we saw a fence which we had not seen in our approach. That did it. We hooked a wing in the fence and the result was a repair job which only the factory could do. What caused engine failure was a broken cam ring.

What little preventive maintenance was done in those days usually consisted of checking the rocker arms for worn bearings—one cause of revving down. Then there was the frequent compression checks for blowing valves; but instead of grinding all the valves, the custom was to fix only the cylinder which seemed to be faulty.

Other common causes of engine failure included broken cam shaft drives, broken cam shafts and cam rings, water in magnetos, broken fuel lines, broken connecting rods, swallowed valves, cylinder heads coming

off, broken water and oil lines, and broken crankcases. Generally speaking, one or more of these things would crop up somewhere between 50 and 100 hours—following a so-called overhaul. This "overhaul" usually came about like this: an engine would get weaker and weaker until you barely got over the fence. Then you'd work it over under some shade tree getting it to rev up properly. After this tuning, the so-called "overhauled" engine would be ready for the inevitable—the weakest part would soon fail.

In our experience we have a paradox: 15 years of early flying that was peppered with forced landings, followed by 15 years with but a single dead-stick landing. And that one due to running out of fuel.

We think our case suggests something significant in the progress of aircraft engine developments. Down through the years, engine people have doggedly kept after malfunctioning causes to eliminate one after another, all the time working to reduce frontal area, to develop more power in less space and with less weight, to accomplish ever-increasing efficiency, and to give the pilot more and more dependability with less maintenance.

We think, too, that our case suggests some remarkable efforts on the part of the pioneers of the Department of Commerce's Bureau of Aeronautics, which came into existence in 1926. These old-timers worked with us and eventually established rules and regulations for the licensing of mechanics. Limitations were prescribed for the number of hours to be flown between periodic inspections and overhauls. Repair shops were licensed to obtain higher standards of overhauls. There was necessity for all of these things, and in due time they paid off.

Having experienced both the "before" and the "after," we find ourselves indeed grateful. Aviation owes a debt of gratitude to all who had part in this effort to obsolete the dead-stick landing—the engine people, the CAA agents, the certificated shops and mechanics, and most certainly the techniques and methods of inspections so vital to flight dependability (we are thinking here of such as Magnaflux, Zyglo and X-Ray).

We have come a tremendous way in the last 20 years. With proper care, inspection, maintenance and common sense utilization, our modern aircraft engine should keep that old propeller churning indefinitely without faltering. To us, this is a great accomplishment—even if we do find ourselves still keeping a watchful eye out for a spot where we can get in, if forced to, and out again after repairs are made.

★ ★ ★

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Leadership naturally attracts leadership! Significant of this is the fact that such a large percentage of the country's leading industries depend on the facilities of the CERTIFIED BEECHCRAFT SERVICE STATIONS listed hereon. These firms are leaders in the aviation industry with many years of experience and service. Their leadership has been recognized through unmatched high standards.

The CERTIFIED BEECHCRAFT SERVICE STATIONS have assembled for you the finest facilities possible, trained the most capable staff in factory methods and sell only authorized parts and accessories. This means no time lost through lack of proper tools, parts or know-how—*all aimed at saving you valuable time and money.* **One visit will convince you there is a difference in the service you receive.**

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General Mitchell Field
Milwaukee, Wisc.
Truax Field
Madison, Wisc.

Atlantic Aviation Service
New Castle County Airport
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Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
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also
Logan Airport
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Chicago, Ill.

Currey Sanders Aircraft Co., Inc.
Downtown Municipal Airport
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Francis Aviation
Capitol City Airport
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Gray Aircraft Svc. Co., Inc.
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More than half of the Beechcrafts in use are serving small businesses with *big* travel jobs. Here's why: The complete mobility of action you achieve lets you compete with anyone, anywhere, anytime. And a small businessman (running the show himself) appreciates more than others the value of executive time. Beechcrafts save as much as 75% on travel time!

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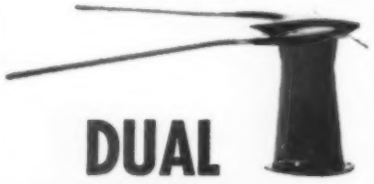
Aircraft Radio Corporation's
A 13-B



DUAL ANTENNA
for all aircraft

The "ramshorn" contour of the A-13B Antenna affords improved signal reception via *two* broadbanded antennas. The horns are for use with VOR and runway localizer receivers, the bars for glide-path receivers. Both antennas terminate in BNC co-ax fittings UG-291/U. Their low head resistance provides freedom from icing and other structural problems. Already in wide use on transports of Pan American Airways, Eastern Air Lines and others, as well as Army, Navy, and Air Force (AN designation AS-580/ARN-30). This new antenna is designed for *all* aircraft, from helicopters to multi-engine transports. It is CAATC # 1R4-4. Available now. Write for full details today.

ARC
Dependable Electronic Equipment Since 1928

Aircraft Radio Corporation
Boonton, New Jersey

AIR REPORT

(Continued from page 7)

Dick Johnson last year made his world record distance flight.

DEVELOPMENT OF A NEW LYCOMING TURBO-PROP AIRCRAFT ENGINE has started under a USAF contract with the Lycoming-Spencer Division of Avco. It is under direction of Dr. Anselm Franz, who designed and developed the German Jumo 004 jet which powered the ME-262, world's first combat-tested jet fighter. Franz came to the U. S. following the war. . . . **BUILDING OF FOKKER S-14 TWO-PLACE JET TRAINER** by Fairchild Engine and Airplane Corp., has been authorized by agreement with Fokker Aircraft Corp., of Amsterdam, Holland. It is powered by the Rolls-Royce Derwent Jet, has an 8,280-lb. empty weight and a 400-mph. cruising speed at 25,000 ft., according to Fairchild.

USAF PURCHASES OF 8,000 GYROSYN COMPASSES, 2,800 DIRECTIONAL GYROS AND 700 AUTOPILOTS have been announced by Sperry. . . . **QUANTITY PRODUCTION OF HELICOPTER AUTOPILOTS** has been ordered from Minneapolis-Honeywell by USAF. The new autopilot was developed with Piasecki Helicopter Corp., and will be used on the new H21 Piasecki helicopters. . . . **BRANIFF AIRWAYS HAS RECEIVED FIRST OF 20 NEW CONVAIR 340 AIRLINERS** costing over $12,000,000.

COMBINED DOLLAR SALES TOTALLING $24,574,000 DURING 1951 have been reported by 27 of the 36 distributor members of the Aviation Distributors and Manufacturers Association. Figure does not include sales to the government, military sales or income covering labor or overhaul operations, says Executive Secretary Don Richards.

FIVE-YEAR CERTIFICATE RENEWAL FOR CENTRAL AIRLINES from May 15, 1951, is provided for in CAB examiner's report which also would extend Central from Texarkana into Little Rock via Hot Springs and add a segment between Tulsa and Oklahoma City via Stillwater and Shawnee. . . . **MERGER OF WEST COAST AIRLINES AND EMPIRE AIR LINES** was to be effected August 1 under name of West Coast Airlines, with 2,000 route miles connecting 43 cities. . . . **SEVEN-YEAR CERTIFICATE RENEWAL** for Robinson Airlines has been granted by CAB. Robinson may soon change its name to "Mohawk Airlines".

NORTH AMERICAN AIRLINES, largest of the aircoach lines, has bought another DC-4 and is negotiating to buy 4 Douglas DC-6A's or Lockheed Super Constellations to meet passenger volume demands. Sales Director Stanley D. Weiss said the line's revenues topped a million dollars in June "and we could have doubled it except for the aircraft shortage."

(Continued on page 49)

"THIS YEAR MORE PILOTS WILL STOP AT **TRADEWIND** IN AMARILLO"

Questions and Answers for Airport Operators

The Telephone Nuisance and How to Solve It

QUESTION: As the manager of this airport in a fairly good-size town, I am plagued all day with calls on my telephone asking for information on arrivals and departures of scheduled airlines, on how much a ticket costs, requests to make reservations and a dozen other types of questions which are directly answerable only by the airlines. It has been this way for the last ten years. We try to handle it by referring the caller to the proper airlines but I still believe there should be some way to free us from the constant interruptions that take so much of my time and my secretary's time. Is there any solution?

ANSWER: Yours is a common problem usually caused by the fact that people who want information from airlines think in these terms of "Let's call the airport and find out." Then when they turn to the phone book they find that a public airport, if listed in the white section at all, shows only the manager's number. In many towns it is not listed except under "City Offices" and there the number will be that of the manager. In the yellow section of the phone book almost invariably the first number under the heading "Airport" is the manager's office. The airlines are listed under some heading such as this, "Airline Companies." So when people think of calling up to find out when Flight 17 comes in and turn to the airport, they pick the first number and you get the call.

Now this isn't true in all cases but it follows a general pattern and it seems to be a nuisance which airport managers have felt they must put up with because the public does not know where the responsibilities of the airport leave off and those of the individual airlines begin. When it really is an inconvenience is when such calls are long distance calls.

We believe that a minor part of the inconvenience is that which comes to you from such calls and inquiries. We know that frequently an office consists of a manager and secretary and he cannot dictate a letter without an interruption or two. But the real difficulty and the real inconvenience comes to the customers or potential customers of the airlines. If any air-

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ALL WAYS RIGHT IN FLIGHT

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Enjoy shorter take off—faster climb—smoother cruise—and thousands of hours of carefree flying.
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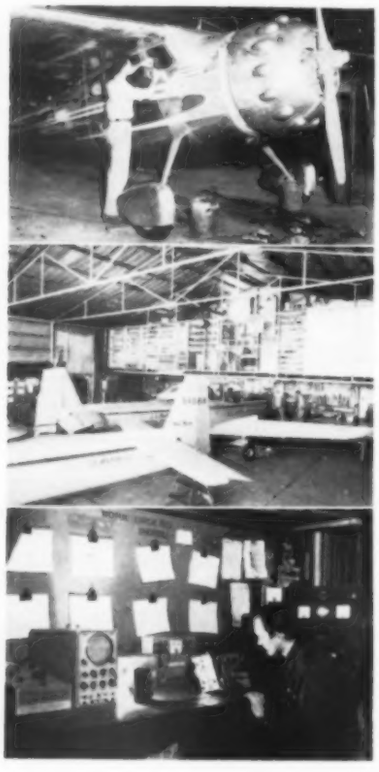

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The aircraft repair shops at West Texas Flying Service are completely equipped for major and minor repairs, including complete aircraft and engine overhaul facilities.

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Our radio shop at West Texas Flying Service is completely equipped for all radio installations and repairs for personal and executive aircraft. Custon designed radio installations.

Transients — plan your next flight to include Midland.

West Texas Flying Service

Midland Air Park **Midland, Texas**

port manager's office is closed after normal business hours to reopen again at the beginning of the business day and if that office is not manned on Saturday afternoon and Sundays, think of the impression the public gets when no one answers at the airport. Many of the people who make these calls may be potential customers who still have their first airline ride to make. They are not familiar with airline travel and with the airline companies serving the community, so they call the airport. The impression they get is not one that shows a particular regard for service. It is nobody's fault particularly except the customer's, but the customer who does not know his way around airports may have just as much money in his pocket to travel as the one who does.

If you don't believe that these calls come in after the airport manager's office is closed, just spend an evening there and see how many calls you answer.

During the period when your office is open and your phones are being answered, these same people may call, and do, at frequent intervals. They want information that you can't tell them, at least with certainty, and then what do they think of the airport and airline service? We know what they think because at times we have listened to such calls and found the caller disgruntled and in a hurry to get something that you could not give him accurately. So it seems to us that this problem is much more than one of annoyance to you. It is a matter of concern to the general public and to the airlines, which may spend thousands of dollars in advertising and service for the customer and then have disservice rebuff him at his first attempted contact.

In a major terminal where a private branch exchange serves all the tenants, the selection of the extension to which the call may be routed is simple and is made at the switchboard. But for those terminals where this sort of arrangement does not exist it seems necessary for the airport manager and his secretary to have conveniently near them or completely in their minds the information that will enable them to tell the customer whom to call. This means a thorough knowledge of the routes of all the airlines serving the terminal, with some knowledge of the connections. Considering the changing schedules, it seems almost impossible for you to attempt to give schedule information without making the burden onerous and without keeping time tables absolutely up to date. Nor can you advise the customer when Flight 17 will be in because it may be late. Where you have a request involving transportation to or from some competitive point, in all fairness you must be able to give the names of the air-

lines for whom the caller may be a potential customer.

We have known of such cases as this where a caller would start with, "I want to make a reservation". Answer, "What airline, please". And then the caller says, "Municipal airline, of course". That sounds silly but it has happened. But think of the inconvenience of the man who calls long distance to make a reservation and sees his six-bits wasted because he has to place another call. Some managers avoid this inconvenience by checking every long distance call coming in before accepting it to see just what the caller wants.

We believe that if this problem at your airport is as it is at many others, you should suggest its serious aspects to the airlines. We remember one manager who fought this particular problem for over four years and finally sold the airlines in his town on the disservice it was giving to their potential customers with the result that at long last, under the heading "Airports" in the yellow section of the phone book, all of the airlines were listed in alphabetical order before his number was listed. His calls were reduced about 90 per cent and that is about all you can expect because some people will insist on calling the airport rather than the airline.

It can be worked out but sometimes it is a tough, hard fight to get a good solution. Incidentally, in the case above, immediately after the heading "Airports" was the statement "For reservations and information call the airlines". This same manager tried using just that phraseology before he succeeded in getting the airlines listing under "Airports", and his results were not appreciably better. The answer is in getting the airlines listed under "Airports".

Airports Won't Run Themselves

QUESTION: **Where does the airport manager's responsibility end with respect to the quality of service furnished the general public by the tenants and users of his airport? I have been criticized and rebuked a number of times for making suggestions for the betterment of service to the public both by the scheduled and non-scheduled users of my airport. I am at the point now where I hesitate to do anything except run my airport and give the best service that I can.**

ANSWER: As an airport manager operating a public airport you are not only the administrative officer and responsible to the officials of the owning agency but you also have a duty to the general public and to tenants and users even if they are reluctant to acknowledge it. It seems to us that if any tenant or user, operating for profit or in hopes of profit, permits his operation to reach a stage where it does not adequately serve

16,000 square feet of modern warehouse and office space, centrally located at Love Field in Dallas.

SERVICE

TO THE AIRPORT OPERATORS THROUGHOUT THE SOUTHWEST

Since 1927, Airport Operators have always depended on Air Associates for their aviation needs.

Today, more than ever, Air Associates are able to offer a greater service. A new warehouse stocked with over 10,000 items of different type, shape and sizes. A staff of personnel with a sum total of over 140 years aircraft experience. It's no wonder the Aviation Industry looks to Air Associates, First!

...entific arrangement of office personnel assures a maximum of speed and efficiency in order handling.

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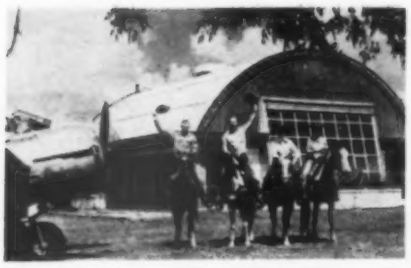

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...for Holidays in the Hills!

A happy haven for airmen—Texas' famous fly-in ranch where friends gather for fun. Horseback riding, fishing, swimming, favorite sports —and flying's always swell at the Flying L. Write now for reservations and colorful folder.

Superb facilities for overnight, a week or a season.

Dependable Parts Service

Be assured of highest quality and satisfactory service by ordering from our large stocks of factory parts and supplies.

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For immediate delivery, we are currently offering specials on overhauled and factory-exchange Continental E-185 engines for Bonanzas and Navions.

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D. A. Cody, Manager
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Love Field, Dallas

CALIFORNIA ASSOCIATION OF AIRPORT EXECUTIVES has planned a full year of activities at a meeting in Stockton. Leaders taking part are shown above. Seated, left to right, are Clarence M. Shy, Stockton; William H. Leavings, Humboldt County; H. S. Messersmith, San Francisco, and C. O. Brandt, Chico. Standing, left to right, are Vernon Tyler, Santa Monica; Wilmer J. Garrett, Fresno; Glenn L. Arbogast of Long Beach, new association president; Fred Sullivan, Hawthorne; Cecil Meadows of Kern County, national AAAE president; and H. W. Livermore, El Monte.

the public of your community in convenience or in the amount and quality of service, you have a right and a directive to attempt to bring about improvement. This holds good in every respect so long as you stay within the latitude of economic returns to the tenant.

Very frequently you find the airport manager's office is away from the lobby, perhaps on the second floor, but the strong airport manager knows what is going on in his terminal, at the ticket counters, among the redcaps, at the taxi stand and along the hangar line. That same strong airport manager isn't likely to say, "I can't do anything about that, it is the airline's responsibility". Instead of that he will bring deficiencies to the attention of his operators and try to better them.

When baggage delays inconvenience incoming passengers it is part of his business to try to work something out. When his so-called charter operators give service only when they feel like it, he is concerned. You will find that a strong airport manager does a lot of circulating on his airport. He knows what's going on. He always has his eye out for the passengers' safety because passengers many times must be protected against their own carelessness. Sometimes improvement has to be crammed down the tenant's throat but usually it is for his own good and won't put him out of business. You have been re-

FOR the BEST in RADIO SERVICE . . .

Require: Experience in workmanship and the finest quality materials.

Matthews Electronics is highly qualified to give the aircraft owner specialized engineering and consultation service on his present or contemplated radio equipment. We will make planned proposals for special designed installations. Whatever your needs in aircraft radio MATTHEWS offers superior products with built-in qualities of excellence and the experienced technical knowledge that defies competition.

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MUNICIPAL AIRPORT — Milby-6636 — HOUSTON 17, TEXAS

SEND-OFF FOR DALLAS-TOPEKA SKY LADY DERBY sponsored by WNAA is shown above, with E. J. Reeves, active in many aviation organizations and the Soaring Society of America, briefing the entries. Ann Hertline of Belleville, Kansas, was winner. Picture was made by Southwest Airmotive at its Love Field ramp, headquarters and starting point for the Sky Lady Derby.

buked and so has many another airport manager. The reason and agreeable approach to the solution of mutual problems must be a continuing process. The industry is getting away from the feeling that airport managers can be martinets and demand things purely on their own say so. But nevertheless, firm reason must be a part of the makeup of a successful airport manager and a medium thick skin does not hurt any. ★ ★ ★

Here's the NEW NARCO SUPERHOMER
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NEW COURSE SELECTOR
New Vernier course selector makes omnirange better than ever! The easy to read, clearly calibrated dial simplifies course selection and makes cross country flying a joy.

The compact Superhomer is the finest of all single unit VHF sets, defines your course to or from any omni station within receiving distance. Ruggedly built, yet a miracle in electronic perfection. Investigate the NARCO Superhomer today! Immediate delivery. See your NARCO dealer now (coast to coast sales and service) or write for bulletin.

SENSITIVE RECEIVER You get fast, clear, crisp tuning with the Superhomer's geared tuner. From 108 to 127 mc there's ease of frequency selection, high performance, clear static-free reception.

IMPROVED CIRCUITS! The Superhomer "built-in" double noise limitors shield engine noise and increase omni accuracy.

LIGHT WEIGHT! Ten pounds installed, including antennas and leadins. Panel space: 5¼" by 6⅞" Case depth: 10¼"

LOWEST COST! Costs less, gives more value. Superhomer is easiest to install, may be altered for additional channels and NARCO low frequency receiver.

ONE SMALL PACKAGE! A tunable VHF receiver. A multi-channel VHF transmitter. An omni converter and indicator. A three-in-one special, engineered for the small aircraft owner.

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WHIZ "C" WINDSHIELD CLEANER

Here's Why "C" is BEST

1 NON-CRAZING—Can be used on glass or any plastic—contains no harmful solvents. Will not craze or cloud.

2 WORKS FAST—Quickly removes oil spatter, grime and bug juice.

3 EASY TO APPLY AND REMOVE—Leaves surface clear—free of dust or film.

4 NOT ABRASIVE—Cannot scratch or dull window surfaces.

5 NON-INFLAMMABLE, NON-TOXIC—"C" is safe to use—safe to store!

"C" is a quality WHIZ product—made by the world's largest manufacturer of quality maintenance products.

Ask your supplier for

WHIZ "C" WINDSHIELD CLEANER

CLEARLY THE BEST

Whiz

Available in pints and gallons

Industrial-Aviation Division

R. M. HOLLINGSHEAD CORP.

Leader in Maintenance Chemicals

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need a 100 hour
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BONANZA

If you need a 100-hour check on your Bonanza or have any other maintenance requirements you will want to look into the merits of doing business with AIRCRAFTSMEN. Here is an organization equipped and staffed to take care of all your needs in the least amount of time and in the most economical manner possible.

- **Aircraftsmen also offers one of the most complete Continental overhaul shops in the nation. Factory trained specialists using factory designed tools and authorized parts will put extra efficiency and life into your Continental Engine.**

- **In radio equipment there's nothing that beats day-by-day good performance. That's why Aircraftsmen offers you Lear radio equipment. We know that Learadio is the finest on the market and an Aircraftsmen installation makes a winning combination with trouble free operation. So for the radio reception that means good flying, see Aircraftsmen first.**

Whether you need a windshield cleaned or a major overhaul, you will always find AIRCRAFTSMEN ready to serve you. Our work is backed by many hundred aircraft owners who accept only the best and who have depended on AIRCRAFTSMEN for many years for the finest in aircraft service and maintenance.

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WILL ROGERS FIELD OKLAHOMA CITY, OKLA.

Flight Safety

(EDITOR'S NOTE: These interesting and valuable notes and views have been briefed from bulletins issued by Flight Safety Foundation, of which Jerome Lederer is director. They are presented with the thought that our readers will find them useful in their flying.)

More About Collisions

Is 500 ft. on top enough? In other words, is 2 seconds enough? Here's an accident report which should convince pilots of the growing hazards of such flying, particularly in the vicinity of areas where military jet traffic is known to be encountered.

About 2½ miles north of an Air Force base, an F-94 and a C-47 were in collision (the C-47 could have been a civilian airplane). The results were fatal.

Both F-94 and C-47 were on VFR clearances. The jet was letting down through a hole in the overcast, which was at 7,000-8,000 ft. and about 700 ft. thick. The C-47 was on VFR, having a 500-ft.-on-top-clearance. The F-94 was returning from a gunnery mission. Apparently the jet pilot saw the C-47—he had the jet in a 90-degree bank at the time of the collision; his F-94 hit the transport's wing.

It should be emphasized that in this case, visibility was good. Also, there was no nearby surveillance radar. There is a 3-mile tower control zone at the base.

The accident appears to be the result of VHF clearance and this type of accident will undoubtedly occur in ever-increasing numbers if instrument clearances are not required or special control procedures inaugurated, particularly at those airfields

FIRST TRANSCONTINENTAL FLIGHT by the Allison Turbo-Liner took the turboprop Convair from Edwards Air Force Base in California to the Allison hangar at Indianapolis, Ind. Each of its Allison T38 engines with Aeroprop propellers is rated at 2,750 hp.
—(Allison Photo.)

SOUTH AMERICAN SALES TOUR is being made in a Beechcraft Twin-Bonanza by M. G. Neuburger (left), Beech export division, and Factory Pilot Warren Filer. Beech export sales now lead the personal plane industry in dollar volume.
—(Beech Photo.)

or areas where high-speed flying is in operation—a jet could take off from a fighter base and have cleared the tower, thereby being completely on its own to wander around at over 500 mph. while other aircraft were making approaches.

The reverse was the case in the accident cited above—a letdown was being made at about 600 mph. without approach control, and a slow-speed airplane was climbing up.

A Near Miss

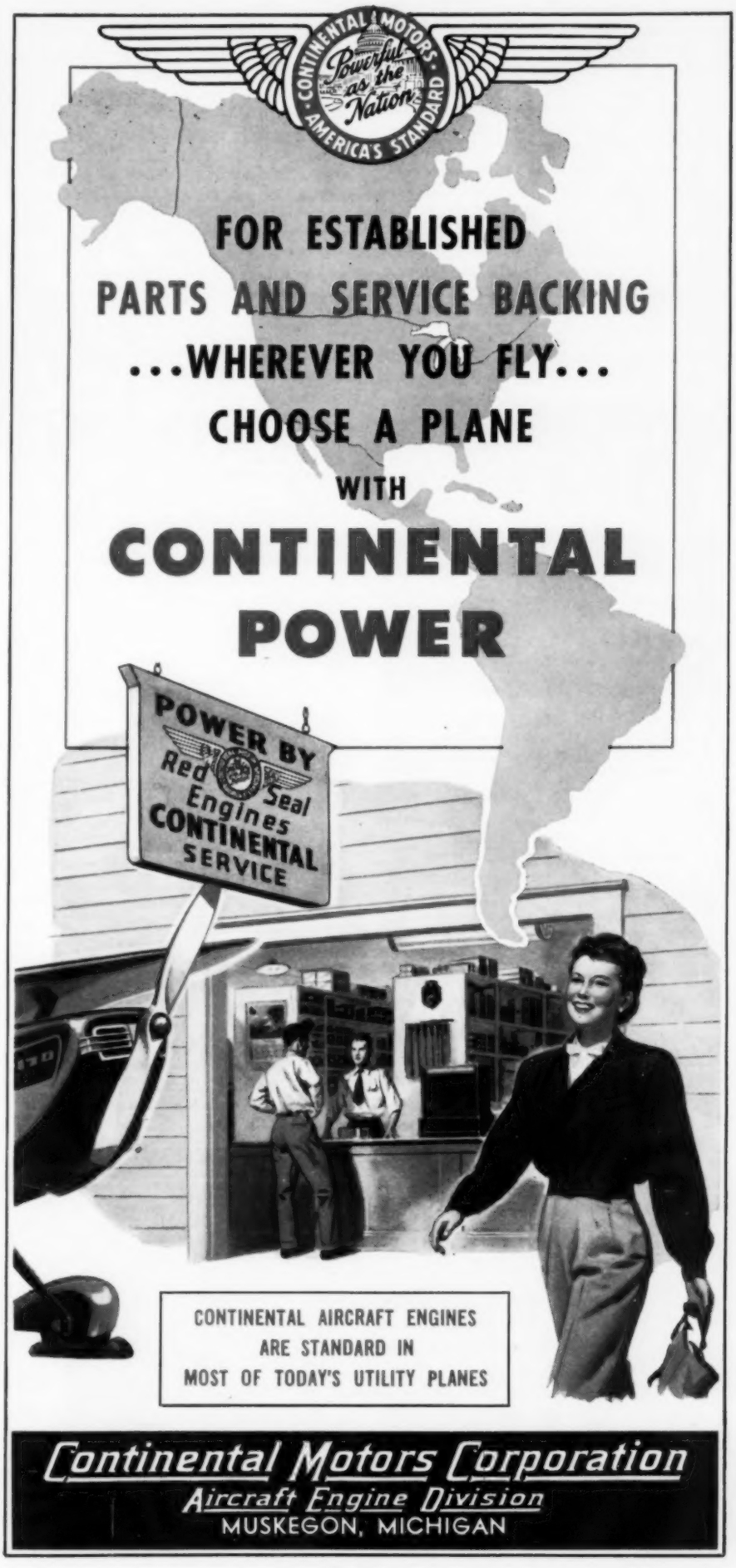
A pilot reports the following:

"I was cleared for right approach to land on 27L at OAK. While in my turn, at approximately 40-degree bank, to line up with the runway, a lightplane appeared under my right wing tip, less than 100 ft. away and probably less than 50 ft. away. I was flying a DC-4 and was on an approximate heading of 260 degrees magnetic when he was sighted on a heading of approximately 320 degrees magnetic.

"My co-pilot estimated that he missed our right wing tip by 20 ft. He was in a much better position to compare the distance than I."

Safety by Design

Excerpts from some of the Flight Safety Foundation's bulletins have been used by the airworthiness engineer of a large aircraft manufacturer, who added thoughts of his own and produced the following "Design Sense" for engineers employed by his company. This and other material will be distributed later by the Cornell-Guggenheim Aviation Safety Center to instructors and professors of aeronautical engineering at many universities as well as to the manu-



facturers. Meanwhile, our readers will appreciate the information and may want to pass it along to their friends in the industry. Here it is:

We all know that airline and military flight and maintenance personnel are carefully selected on the basis of highest intelligence and competence.

Engineers, however, tend to overlook the fact that such personnel are also human—hence not infallible.

Too often "pilot error" accidents can be traced directly or indirectly to an engineering decision to consider a troublesome design problem as an "operational matter" to be covered by manual material.

Engineers and draftsmen can make a substantial contribution to flight safety by adhering to the following rules:

1. Assume the following as standard operating conditions in service. (A) All crew members and mechanics wear mittens. (B) All flights made under instrument conditions, two engines out on one side, co-pilot sick, extreme turbulence. Under these circumstances, you can imagine how impractical it would be to depend upon reference to "paragraph 1.22 (a), page XX of blank handbook for instructions." (C) All ground maintenance conducted on ramp at night in 6 inches of slush with high wind and a freezing rain.

LESS CONSCIENTIOUS MECHANICS MAY BE TEMPTED TO DISREGARD CRITICAL MAINTENANCE OPERATIONS IF DIFFICULT OF ACCESS OR ACCOMPLISHMENT.

2. Emphasize uniformity and simplicity. (A) Avoid design features and details which, from a maintenance or operating standpoint, deviate from accepted good practice. Refer to applicable standards and recommended practices. (B) Keep it simple and accessible.

OPERATIONS SHOULD BE ACCOMPLISHED IN A NATURAL, LOGICAL MANNER WITHOUT UNDUE MOTION OR SPECIAL ATTENTION.

3. Automatic features. (A) Balance the advantages of automatic features against the established reliability of the necessary mechanisms. Stress fail-safe characteristics. (B) Carefully scrutinize proposed new functional or warning devices to insure that their presence does not introduce a new hazard. Consider reliability of all mechanisms, giving particular attention to ruggedness and freedom from probable damage or inadvertent operation.

4. Operating instructions. (A) Use brief, clear instruction placards located in most logical position with respect to function concerned. Avoid dependence upon manual for reference in actual operation. (B) In preparing or in considering need for instructions, project yourself into the operator's (mechanic's or crew's) position but assume that you are not as smart as you really are. Paragraph 1 establishes environment quite different from that of the warm, well-lighted engineering department.

REMEMBER: THE SIZE OF THE MAINTENANCE AND OPERATIONS MANUALS IS INVERSELY PROPORTIONAL TO THE ABILITY OF ENGINEERING TO ELIMINATE MAINTENANCE AND OPERATIONAL BOOBY TRAPS IN THE DESIGN STAGE.

• Taylorcraft "Sportsman"

THE WORLD'S BEST DISTRIBUTORS SELL Taylorcraft..

WALLY TIMM, Mgr,. Taylorcraft Distributors of Southern California, Whiteman Air Park, Pacoima, Calif., "We wanted to handle Taylorcraft because its quality and durability are tops, even though it's the lowest priced plane on the market."

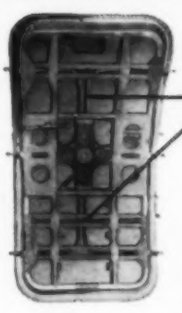
4-place utility at 2-place cost, with side-by-side seating and big cargo space! This, plus all-around visibility, 85 H.P. engine with starter and generator, and many other features, makes the 2-place TAYLORCRAFT "Sportsman" the best buy in the LOWEST PRICED field. ● For detailed information, see your airport operator or write direct.

2 Place—4 Place—Tandem

MR. AIRPORT OPERATOR: Great opportunities exist in Dealer Franchises. Write for information today!

TAYLORCRAFT, INC.
Conway-Pittsburgh Airport, Conway, Pa.

SIMMONDS ENGINEERING BRIEFS



Four Push-Pull Controls saved weight, engineering time and installation costs for forward passenger and cargo door of Martin 404. Four plungers operate by Simmonds controls, with two direct-line plungers on center. Bend is 90° on each push-pull, plus fit to door curvature. Maximum allowable applied load: 300 pounds.

Pre-formed, engineered controls save assembly, maintenance time . . . are lighter, cost less than alternate units. Eight similar controls used in doors of Douglas DC-6. For full data on control installations, write to:

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Branch Offices: Glendale, Calif. • Dayton, Ohio
Dallas, Texas • Washington, D.C. • Montreal, Canada

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AIR REPORT

(Continued from page 40)

AN 18,000-MILE BUSINESS FLIGHT TO EUROPE is being made by Arthur D. Knapp, owner of Mechanical Products, Inc., of Jackson, Mich., in his executive B-25. Grand Central Aircraft at Glendale, Calif., installed in the B-25 $30,000 worth of new navigation equipment. Lloyd Zantop is company pilot.

FREQUENT FLIGHTS BETWEEN TEXAS AND AFRICA are being made by an executive A-26 owned by the LeTourneau Company, heavy earthmoving equipment manufacturer which is working on a huge construction project on the Dark Continent. Associated Radio of Dallas made radio installations in the A-26, of which Barney Barnwell is pilot. LeTourneau also plans to operate a C-46 on the Texas-Africa route.

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"Over 30,000 STUDENTS have used "FROM THE GROUND UP" as their examination primer. Covers elementary Theory of Flight, Airmanship, Meteorology, Air Navigation, Radio, Aero Engines and Airframes. Explains and solves 96 CAA Commercial Pilot Examination questions. Concise. The whole thing is packed into 136 pages. Written in simple non-technical language throughout. Send $2.75. No C. O. D's. Department "A", Aviation Service Corp., Port Credit, Onatrio."

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TAYLORCRAFT SPORTSMAN (new model 19) now available for immediate delivery. America's finest 2-place, side-by-side airplane. Extra big baggage compartment gives 4-place cargo utility. Lowest price including starter, generator, 12-volt system, etc. Ideal for CAP, farm, business man, training. See your local airport operator or write today TAYLORCRAFT, INC., Conway-Pittsburgh Airport, Conway, Penna.

PILOT POSITION WANTED

Commercial pilot, age 28, single and multi-engine land and instrument. Former airway operations specialist, CAA. Presently with CAB. College graduate. Desires flying position with or without allied duties. Full resume upon request. Dept. S-1, FLIGHT MAGAZINE, Box 750, Dallas, Texas.

Flight Lines ★ ★ ★

Don't Land Here!

A NOTE with a familiar ring in the Alabama Aeronautics Commission news letter: "Central Park Airport was closed and abandoned June 29. The property has been sold for a housing project. This will leave Birmingham Municipal as the only available airport in Birmingham."

Tom Jordan, director of aeronautics, State of Wisconsin, writes us that Maitland Airstrip in downtown Milwaukee may be taken over for a super-highway around the city. Developed as a 10-year experiment the airstrip's fate remains with private owners—use it or lose it. Like Chicago's Meigs Field and Oke City's downtown airpark, Maitland is one of the best equipped downtown area fields in the nation.

Something's gotta be done to reverse the present trend. Land values are at the root of the problem, purely an economic one. What planners fail to realize is that some day the per-acre value of the land will be greater for close-in airports than for most any other purpose. But that will be too late.

Ironical sidelight: Following the Elizabeth City crashes FHA put out an order that no housing would be approved at local level within a four-mile perimeter of airports—they have to be cleared through Washington. Solution: take over the airport and build houses. The point is that month after month attrition of airports for private owners continues to take its heavy toll and no one seems too concerned about it.

An Amazing Discovery

Here's an enlightening excerpt from hearings on civil airmen training legislation before the House Interstate and Foreign Commerce Committee:

MR. BECKWORTH: General, do you feel that the civil pilot training program helped the Air Force in the last war?

GENERAL DISOSWAY: (Director of Training, U. S. Air Force). I cannot answer that question because I was not mixed up in training during the war, sir. I have heard various reports, some good and some bad. . . .

MR. BECKWORTH: You do not have any general feeling about what good it did? You almost doubt, you would say, that it did any good?

GENERAL DISOSWAY: I would not say that. I would say that it did some good. Whether it ever trained anyone or not, at least it made the American people more air conscious, sir.

We hope the good General who "was not mixed up in training during the war" will spend some time reading the facts about civil pilot training in the same transcript of the hearings at which he appeared. He will learn that from 1941 to 1945 the program trained approximately 500,000 airmen which sure as hell did more than to make the American people air conscious. Even Hap Arnold is on record as to how vital the program was to Air Force expansion. It is incongruous that the general in charge of training doesn't know those simple facts.

Super Egotist

Did you hear about the Texan who cropped up with a button stating "Ike Likes Me"?

How To Say It

If you didn't know better, as we didn't, you would pronounce Kaman Aircraft Corp., the helicopter company, as "Kayman." But Kaman would rather you pronounced it correctly. To guide people, they have a little verse:

It seems our name's confusin'
We don't know whom we're blamin'
But we find it quite amusin'
To hear people ask for "Kaymin".
This poem is written with the hope
(Though it's not a reprimand)
That it will give you all the dope
Quite simply—it's "Comman(d)"

Everybody's better off when names are pronounced correctly. There's "Piasecki," another helicopter leader, for example. Correctly, it is pronounced, "Pie-uh-secki."

WELL-EARNED PROMOTION has come to Ted Smith, general manager of Aero Design & Engineering Co., Oklahoma City, who designed the Aero Commander 7 years ago and headed the group of engineers who perfected it for production. Ted has been made vice president of the firm.

Modern Hangar Flying

We never thought we'd live to see the day when hangar flying would be put on an organized basis. But that's exactly what happened during the past year with a CAA-sponsored program of local discussion meetings on flying safety held all over the country. Some 20,000 pilots have attended these safety bull sessions. Frankie Trumbauer's 5th CAA region out of Kansas City had top billing with 9,372 attending 409 meetings. If interested call your nearest CAA aviation safety agent for a special kit and planning assistance. You'll be surprised how interesting and informative these discussion groups can be. In lots of cases the meetings are not unlike AA meetings in that participants jump up and give testimonials of past sins and what to do about them. A smart copy writer might come along and boost attendance with a tag line such as "Airmen Anonymous."

Gastronomics

Florida's state aviation supervisor, Wally Schanz, airmails that our piece on greasy-spoon airport restaurants brought back nostalgic memories of pre-war Gulf-sponsored flights to the Miami Air Races when we gulped cokes and doubtful hamburgers on little airports while waiting for flying weather. Wally wants us to fly to Florida and eat at the Orlando Municipal Airport where Airport Manager Sandy Sands inveigled the Columbia Restaurant people of Tampa to take over the dining room and bar concession at the airport. Says Wally: "Why not fly down for one of the Florida fly-ins or training missions described in our Florida Aviation Bulletin and see for yourself?"

Lou Inwood, Kansas City director of aviation, also writes in complimenting us on our drive to seek out good eating places for airmen and thanking us for mentioning his airport restaurant. "However," says Lou, "we don't think our restaurant is 'about' the best—we know it is the best in the country."

Facts Versus Theories

Just the other day our mail included announcement by a manufacturer that a brand-new laboratory testing rig could subject aircraft products at umpty-umpty degrees of heat and 80-below freezing. "This," said the announcement, "guarantees these products can stand up under Sahara temperatures or the bitter cold of the North Pole and the stratosphere." We have to disagree. B-36 flights frequently encounter temperatures of 106 degrees below zero above 45,000 ft. When they do, products tested at 80 below prove practically worthless. Scientists and technicians should come out of the laboratories occasionally and familiarize themselves with actual conditions in aviation.

—GEORGE E. HADDAWAY.

New, More Powerful Allison Jet Engines Put Added Sting in the Scorpions

THE NORTHROP SCORPION F-89C — newest all-weather jet interceptor for the Air Force — gets a big power boost from two new Allison J35 engines.

With take-off thrust in the new J35-A-33 engines greatly increased over previous models in the F-89 series, the Scorpion remains the highest-powered interceptor in production in the world today.

This increased power from the improved Allison engines gives the aircraft faster take-off — higher rate of climb — even with heavier fire power and radar equipment.

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Today, Allison engines are depended upon *exclusively* to power the interceptors which guard our shores — a demonstration of confidence based on the unequalled experience of more than 1,700,000 hours in the air — *more time, under all conditions, than all other jet engines combined.*

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Builders of J35 Axial, J33 Centrifuga Flow Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines.

Many attempts have been made to produce a light twin at a reasonable cost. Usually these have failed because development and production costs have "priced" the experiment off the market.

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